

# Railway Age Gazette

DAILY EDITION

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The insulation of steel passenger cars to prevent them from being too hot in summer and too cold in winter is one of the details connected with steel car construction that has not yet been investigated with the scientific thoroughness and accuracy which its importance deserves. While a number of materials have been found fairly satisfactory so far as heat insulation is concerned, those composed of organic matter are not fireproof, and they defeat in a measure one of the principal advantages of steel construction in passenger equipment. Soft pine wood or poplar has been used in the side walls of steel cars as an insulation, and while it is fairly effective is highly inflammable. But when the inside finish of steel cars is made of oiled and varnished wood, and there is no pretense of making them fireproof, the wooden furring in the side walls should not be regarded as objectionable and it is certainly cheap. The best insulators are usually of organic nature, such as hair felt, wool felt, oakum and flax fibres, but they are not fireproof, though it may be possible to treat organic materials chemically to make them so. Such materials, however, are liable to undergo destructive dissolution or carbonization when heated to temperatures above 212 deg. F., in consequence of which their efficiency as heat insulators is greatly reduced. It would seem, therefore, that the rational course to pursue in the search for the most suitable insulator for fireproof cars would be to develop and improve the inorganic materials into suitable forms, and with composition having high insulating value. Loose wool has about the most insulating value of any of the organic materials, and it is characteristic of these materials that they are better insulators when in a loose state. If we take its value as 8 pounds of water heated 10 deg. F. per hour through 18 sq. ft. and 1 in. thick, the heat being applied at 310 deg. F., the hair

felt will heat 10.3 pounds water under the same conditions, its insulating value being in the ratio of 10.3 to 8; loose lamp black, 9.8 pounds; compressed lamp black, 10.6; and loose calcined magnesia, 12.4. When, however, the last named material is compressed its insulating value is reduced more than three times. The figure for slag wool is 13. If it were possible to use a loose material like calcined magnesia, which could be introduced in bulk in the space between the double side walls of the car and in the floor, a very efficient insulation would be obtained; the closer this condition can be secured the more satisfactory will be the results obtained.

Secretary Taylor is to be congratulated upon the excellent condition in which the reports were delivered to members of both associations before the opening of the convention, notwithstanding the fact that many committees were very late in submitting their reports for his handling. President Clark took occasion in his opening address to call attention to the negligence of members in this respect. It is understood that some of the reports, notwithstanding the rules of the associations to the contrary, were not received at the secretary's office until the latter part of May. That they were put through the secretary's mill in time to reach the members at all is entirely due to the energetic action of the secretary.

Some things we have always with us, the iron and loading long material, for example; and the report on the latter subject, though a little confusing unless read with a detailed comparison with the one of a year ago, presented a matter for consideration that could not be slurred, and was not. This is the use of the gondola for superimposed loads. The necessity for such utilization was emphasized in the discussion by the proposal of the committee to limit the height of the center of the load, that is, the center of gravity, to 9 ft. 3 in. With cars running from 108 to 111 in. to the top of the box, it would be pretty difficult to keep the center of gravity down to 112 in. The discussion revolved about the possibility of getting cars during a period of shortage, when steel must lie at the mills or go on top at a height of more than 9 ft. 3 in. Circumstances, therefore, forced the elimination of that section from the report as submitted to letter ballot. With it was the matter of spacing blocks. The use of iron is, of course, to be preferred, provided it is possible to get a material that cannot crush or break, qualities that do not obtain in the ordinary cast iron. This, with the varying openings to be filled, makes the alternative use of wood with angle iron stiffening a necessity. The whole subject is evidently one of those in which mechanical desirability must yield to commercial and operative conditions, things that, in the long run, are usually given consideration in the standards.

The attendance at the meetings is remarkable this year. Thursday morning the room was packed and members were turned away. Both sessions on Wednesday were well attended. It is reported that the officers studied the constitution carefully Wednesday noon to find how many members constituted a quorum, with the idea that there might not be enough present at the second session to enable them to hold a meeting. Much to their surprise, the hall was comfortably filled, and it is not a small room at that. For some reason, possibly because the railways are awakening to the value of the work which is being done by the association, the meetings have been growing larger and larger for the past few years, although the actual membership of the association has increased very little. The increase in attendance and interest is remarkable compared with the meetings at Saratoga. Few of the younger men attended the conventions at the time; this year there are an exceptionally large number in attendance.

The new specifications for brake beams which the committee has recommended as a standard contain requirements as to maximum load when the beam is tested to destruction, but the conditions under which the beam fails are not clearly defined. A beam may break under the test load and there will then be no doubt as to its failure to meet requirements. It may be slightly distorted so as to deflect  $\frac{1}{2}$  in. or 1 in., or it may bend 2 in. under the required load without breaking. What is to guide the inspector in deciding whether the beam has failed when it does not break? Something more should be added to this specification so that there will be no doubt as to whether a brake beam meets the requirements when tested to destruction. Many brake beams are bent sideways and distorted by lateral loads which are much lower than those in the direct line of application of pressure on the shoe, and, as Mr. Curtis suggested, a complete specification for brake beams should include tests of their lateral strength and stiffness as well as those which have been usually required heretofore.

The new specifications for brake shoes contain for the first time requirements relating to the durability of the shoes. The old specifications did not exclude soft cast iron shoes which have a sufficiently high coefficient of friction, but which wear out rapidly; the too highly chilled shoes which wear well but which do not hold as well as the soft iron shoes; and the various insert shoes which have a high coefficient of friction but cut the wheels. The changes in the required coefficient of friction have been slight and the new requirement is important as it will insure some guaranty as to the rate of wear. The Purdue tests and those made at Mahwah by F. W. Sargent have demonstrated the fact that shoes of a proper degree of hardness, and which do not cut either chilled or steel wheels do not wear the wheel to a sufficient degree to warrant wheel wear being made a part of the specification for brake shoes. This having been disposed of, it only remained to formulate requirements relating to shoe wear, and the committee has recommended a definite minimum weight which the shoe shall wear for a given number of foot pounds of work done with separate requirements for cast iron wheels and for steel tired wheels. This is a marked advance over previous brake shoe specifications, and it will serve to clear the field and confine the manufacture to products which, while having a proper coefficient of friction, will not be so soft as to wear out rapidly.

It appears that the comments in Thursday's *Daily* on the discussion on the revision of standards yesterday morning were objectionable to some of the committee on the ground that the subjects are not referred to committees in a "haphazard manner." It is quite possible that the term as used was not exactly appropriate, and certainly it was not intended to intimate that the subjects have been treated in a haphazard manner by the committees having them in charge. In the whole wide range of standards that have been adopted there is not one that does not represent an immense amount of time and labor that have been expended upon it. But in all of this work it is inevitable that some things have been slurred, for even "good Homer sometimes nods." Take, for example, the point alluded to by President Clark, that "it is an injustice to always insist on uniformity where it is not essential to safety." The words were hardly uttered when a report was submitted in which the allowable deflection of a brake beam was given as .0625 in. Objection was immediately raised that this was too close a regulation, for even though it did not mean 1-16 in., it would be easy for an overconscientious inspector to discard a beam that seemed to deflect .063 in. In short, the committee had failed to grasp the full significance of its own language and at once retracted, making the limit of deflection range from

.0625 in. desired to .07 in. This was the intent of the criticism, in that the apparent closing in of limits and strict adherence to absolute uniformity conveyed the impression that action, really painstaking, had apparently been of a haphazard character.

In the matter of the report of the committee on the revision of standards, commented on editorially yesterday, the error in the drawing of the fluted roofing was satisfactorily explained by Mr. Kleine. The reason for recommending the fluted roofing as a standard was also explained. It would seem that the members of the association are to be blamed, more or less, for the action which was taken by the committee, inasmuch as only nine of them replied to the circular of inquiry. Of these nine, eight were in favor of recommending the fluted roofing as a standard. Possibly, however, it would have been wiser if the committee had not made mention of it in the report without additional investigation, as the wooden roof is fast becoming obsolete and there is very little need of such a standard as proposed.

#### SILICON IN STEEL AXLES.

The report of the Committee on Freight Trucks deals principally with the proportions of and weights of standard axles. It contains only brief suggestions relating to the chemical composition of steel for car axles. Future investigation may show that this is of greater importance than is now realized. The stresses in axles are due principally to rapidly repeated bending action combined with action due to shock, and ordinary steel, though possessing much greater strength, higher elastic limit and equal elongation compared with good wrought iron, often fails while iron subjected to the same stresses does not fail. The relation of the percentage of silicon in steel to its resistance to alternating stresses is not generally understood, but laboratory experiments intended to throw some light on the subject have been conducted during the past year, and the indications are that higher percentages of silicon that are now found in axle steel may be beneficial and desirable.

The original specifications for steel axles were prepared from samples of acid process steel having an ultimate strength of 80,000 lbs. Subsequently the basic process replaced the acid, resulting in a steel very low in phosphorus and sulphur and with but a trace of silicon, due to the basic lining and bath in the furnace. This steel was very soft and with carbon up to 0.50 its tensile strength was 55,000 to 60,000 lbs. or about the same as that of boiler steel. The railway chemists and testing engineers did not think it advisable to increase the carbon in this grade of steel on account of the possible effect of the water-cooling of hot journals, and a further study of the problem suggested the use of higher silicon as a stiffener in axle steel. English practice in the metallurgy of steel appeared to favor this suggestion. The plates for torpedo boats, which are required to be light but rigid, and the boiler shell steel for the steamship *Mauretania* contain a larger content of silicon than is usually found in similar structures. Spring steel is subjected to high stresses and constant vibration, and imported samples of this grade were found to contain silicon as high as 1.25 per cent. This has led to a change in the specifications and the use of higher silicon in spring steel than was formerly the practice by most railways in this country.

Samples of higher silicon axle steel when subjected to revolution tests under alternating loads have shown an endurance equal to 4 or 5 times as many revolutions as the ordinary axle steel. With all these indications pointing in the same direction and in favor of higher silicon it is probable that specifications for axle steel will soon receive some modification, as here suggested, from those which have been in use for nearly 15 years.

## FREIGHT CAR WHEELS.

About ten years ago, after the high capacity car had been introduced, the railways found themselves suddenly confronted with a new problem. The bodies and the trucks had grown in strength and size to the new requirements, but the wheel, the burden bearer of the whole, was the same old wheel, with minor modifications, that had been designed and adopted when loads of twenty or twenty-five tons were the maximum. It was found that it was not adapted for a load of 50 tons, and, though the state of affairs was passed over, there was much anxiety because of the frequent failures of the cast-iron wheel. Since then but little has been done to improve that type of wheel, but outsiders have been busy, and the steel wheel has come to the front in its several forms.

The cast-iron wheel had an ample margin of strength for service under the 10 and 20 ton cars, and it is quite evident that the same margin exists in the solid steel wheel, when well made, and put under cars of 50 tons capacity. After the steel wheel had demonstrated its worth, one of the first moves was to safeguard it, and prevent a substitution of the cast wheel for it in repairs by marking up the capacity of the cars under which it was placed to 55 tons, and giving orders that no cast wheels should be placed under such cars, nor should the cars be accepted in interchange unless equipped with steel wheels.

Now comes the next step. The bodies of these old 50-ton cars were of ample strength to carry a heavier load; the steel wheel had the same capacity, so by using a stronger truck, car capacities can be sent ahead another notch. This is being done, and the 70-ton car will soon be in service. The steel wheel has made this possible. It is doubtful if the most enthusiastic advocate of the cast wheel would recommend its use under such conditions. Meanwhile the steel wheel is growing cheaper, and is becoming so common in every day practice that we may look to see it encroaching upon the old domain of its predecessor, the low capacity car, unless some improvement is made.

To maintain that the cast-iron wheel, as marketed, is the very best that can be made is absurd. There is no doubt that it can be improved, and greatly improved over its present condition, but strange to say it is very difficult to obtain data as to just what is being done. Nickel has been added to the metal in small quantities, and the strength has been increased. Wheels made by this process have been in service for a little more than a year, and are giving a good account of themselves, but whether the railways will consider its 50 per cent increase of strength over the ordinary cast-iron wheel a sufficient warrant for its use in high capacity cars, remains to be seen.

Then, there are rumors of the use of titanium, by which the metal will be so cleaned that its strength will be increased, and it will be made suitable for heavy work. Information regarding the results thus far obtained are too meagre to warrant an opinion, other than that a trial along these lines seems worth while.

The Master Car Builders' Association is doing nothing in the matter, and any improvement is evidently expected to come from the makers. The railways know now that a wheel is available at a not too excessive cost that will more than meet their requirements, and that they can relieve themselves from anxiety by using it. With this position of serenity assured, there is no reason why they should worry over the wheel question except in the matter of price. So it is more than ever up to the cast iron wheel makers to bestir themselves and produce the wheel that everyone thinks can be produced, namely, a better one than that now made, if they are to hold the market that was theirs without dispute for so many years.

## SUPPLY MEN'S DISTRICT MEETINGS.

District meetings of the Railway Supply Manufacturers' Association for the election of members of the executive committee will be held in the Convention Hall on Friday, June 17. New members will be elected to succeed A. L. Whipple and Thomas Aldcorn, of New York; W. H. Miner, of Chicago, and S. P. Bush, of Columbus, Ohio. The meeting for the second district will be at 3 p. m., for the fourth district at 3.30 p. m., and for the fifth district at 4 p. m.

## UNIVERSITY OF ILLINOIS MEN—NOTICE.

All University of Illinois men in attendance at the convention are requested to get together at a dinner to be arranged for Saturday evening, June 18.

Be sure to register your name and address at the booth of the Dearborn Drug and Chemical Company, number 8, immediately to the left as you enter the pier. Register this morning as you go in.

## TO-DAY'S PROGRAM.

## M. C. B. ASSOCIATION.

## Morning Session.

## Discussion of Reports on:

Consolidation of Master Car Builders' and Master Mechanics' Associations .....	10:00 A. M. to 10:30 A. M.
Classes of Cars .....	10:30 A. M. to 11:00 A. M.
Salt-water Drippings from Refrigerator Cars .....	11:00 A. M. to 11:15 A. M.
Mounting Pressures on Wheels and Axles .....	11:15 A. M. to 11:45 A. M.
Individual paper on "Design of Axle to Carry 50,000 Pounds," by E. D. Nelson, Engr. Tests, Pennsylvania Railroad .....	11:45 A. M. to 12:00 M.
Springs for Freight Car Trucks..	12:00 M. to 12:30 P. M.

## Adjournment.

## Afternoon Session.

## Discussion of Reports on:

Train Lighting and Equipment...	2:00 P. M. to 2:30 P. M.
Lumber Specifications .....	2:30 P. M. to 3:00 P. M.
Unfinished business; Reports of Committees on Correspondence, Resolutions, and such other committees as may be named during the convention .....	3:00 P. M. to 3:15 P. M.
Election of Officers .....	3:15 P. M. to 4:00 P. M.

## Adjournment.

## ENTERTAINMENTS.

10:30 A. M.—Orchestra concert, Entrance Hall, Million Dollar Pier.

3 P. M.—Adept mistic. Miss Eva Fay, in her wonderful work of thaumaturgy, occult demonstrations. Miss Vera Berliner, violinist. West Solarium, Marlborough-Blenheim Hotel.

9 P. M.—Military Euchre, Entrance Hall, Million Dollar Pier.

## LOST.

Lost—A small pocket-book containing a \$5-bill and belonging to Miss Ramona Hubbard. Finder will please leave with E. T. Sawyer at the booth of the Commercial Acetylene Company, or at the office of the *Daily Railway Age Gazette*.

## MEN WANTED!

Military Euchre Tonight—Every lady at the convention is looking for a partner to invite her to play military euchre tonight.

## ANNUAL MEETING, SUPPLY ASSOCIATION.

The annual meeting of the Railway Supply Men's Association will be held in Convention Hall, on the Million Dollar Steel Pier, Saturday morning at 11 o'clock sharp. A large attendance of supply men is desired, as important business will be presented to the meeting.

## M. C. B. REGISTRATION.

The following are additions to the lists published in the *Daily* on June 15 and 16:

Acker, Charles L., M. M., Toledo Terminal R. R., Brunswick Hotel.  
 Bartlett, Henry, G. S. M. P., Boston & Maine R. R. Co., Brighton Hotel.  
 Cade, J. R., M. C. B., G. H. & H. Ry. Co., Traymore Hotel.  
 Craig, Andrew, Gen. Foreman, B. & M. R. R., Room G, Young's Hotel.  
 Deibert, Jno. H., F. C. R., Lehigh Valley R. R., Boswell Hotel.  
 Dillon, S. J., M. M., Penn. R. R., Pennhurst Hotel.  
 Dunham, W. E., S. M. P. & M., C. & N. W. Ry., Haddon Hall.  
 Fritts, J. C., G. F., Del., Lack. & Western R. R., Traymore Hotel.  
 Geesey, Roy W., Foreman Car Insp., Penn. R. R.  
 Gray, B. H., S. M. P., Mobile, Jackson & Kansas City R. R., St. Charles Hotel.  
 Harris, J. D., G. S. M. P., B. & O. R. R., Brighton Hotel.  
 Joughins, G. R., S. M. P., Intercolonial Ry., Chalfonte Hotel.  
 Keagy, Chas. O., Gen. For., Penn. R. R. Co., Chalfonte Hotel.  
 Kipp, A., G. C. I., N. Y., O. & W. Ry., Chalfonte Hotel.  
 McIlvaine, C. L., Asst. Engr. M. P., Pennsylvania R. R., Chalfonte Hotel.  
 Marden, J. W., S. C. D., Boston & Maine R. R., Brighton Hotel.  
 Plow, A., Mech. Insp., Canadian Pac. Ry., Rudolf Hotel.  
 Rae, C. H., G. M. M., Louisville & Nashville R. R.  
 Rasbridge, R. B., C. C. I., P. & R. Ry., Dennis Hotel.  
 Ryan, J. J., S. M. P., Southern Pacific Ry., Traymore Hotel.  
 Sage, R. V., Cambria Steel Co., Brighton Hotel.  
 Shone, Wm., G. F., N. Y. C. & H. R. R., 9 Indiana Ave.  
 Singer, J. W., M. C. B., L. S. & M. S. Ry., Arlington Hotel.  
 Smith, Benjamin T., Gen. Foreman, W. J. & S. S. R. R., 148 Maryland Ave.  
 Whitcher, R. P., Gen. For. Car Dept., B. & M. Ry., Monticello Hotel.  
 Yergy, J. P., Ins. Pas. Equip., Penna. R. R. Co., Philadelphia Hotel.

## M. C. B. GUESTS.

The following are in addition to lists published in the *Daily* on June 15 and 16:

Armstrong, Fred B., Foreman, P. R. R.  
 Banker, L. W., Foreman, P. R. R.  
 Haynes, Bradley S., Jackson Hotel.  
 Beaumont, C., Chief Clerk, B. & O., Young's Hotel.  
 Beswick, K. H., Foreman, Penna. R. R.  
 Bodell, Thos., Rd. For. Eng., P. R. R., Worthington Hotel.  
 Boyer, W. P., Asst. Foreman, P. R. R., Biscayne Hotel.  
 Bond, W. S., Asst. For., P. R. R., New Elberon Hotel.  
 Boydston, Frank T., Chalfonte Hotel.  
 Brogan, J. P., Gen. For., D. L. & W., Traymore Hotel.  
 Brown, B. S., Draftsman, P. R. R.  
 Buchbaum, F. J., Engine House Foreman, P. R. R.  
 Bunnell, F. O., Engr. Tests, Rock Island-Frisco Lines, Marlborough-Blenheim Hotel.  
 Burkhard, A. A., A. G. For., N. Y. C. & H. R.  
 Burkheimer, H. W., M. M., N. O. G. N., Shelburne Hotel.  
 Burkheimer, H. W., S. M. P., N. O. G. N., Shelburne Hotel.  
 Burton, Geo., Jr., For., P. R. R.  
 Casey, J. T., For. Ptr., P. R. R.  
 Carmichael, E., Gen'l Foreman, P. R. R.  
 Clement, S. L., For. Pass. Eq., C. R. R. of N. J.

Cook, C. A., M. Ptr., P. R. R., Dennis Hotel.  
 Davis, A. G., Traffic Mgr., Cleveland Provision Co., Runnymede Hotel.  
 Diebert, Wm., Boswell Hotel.  
 Drawbaugh, E. L., Ch. Car Ins., Cum. Valley, Chalfonte Hotel.  
 Dress, G. M., Chalfonte Hotel.  
 Elliott, Edward O., Ch. Draughtsman, P. & R.  
 Endsley, Louis E., Asst. Pro., Purdue University, Chalfonte Hotel.  
 Evans, R. C., Pennhurst Hotel.  
 Fornalt, F. E., Foreman Painter, P. R. R., De Ville Hotel.  
 Fosnot, G. N., Ch. Cl. M. M., Cum. Valley, Chelsea Hotel.  
 French, E. L., Air Brake Foreman, P. R. R.  
 Frost, Harry, Engine House Foreman, P. R. R.  
 Gardner, G. C., Gen. For. Mot. Power, P. R. R., Marlborough-Blenheim Hotel.  
 Gardner, J. T., Vandalia, Shelburne Hotel.  
 Gearhart, J. F., M. Ptr., Penna. R. R., Dunlop Hotel.  
 Hardy, C. R., M. P. Insp., P. R. R.  
 Haughey, J. B., Shop Foreman, P. R. R., Biscayne Hotel.  
 Haynes, I. W., Car Agt., Cornwall & Lebanon, Jackson Hotel.  
 Jeffery, C. A., Secy. to G. S. M. P., B. & O., Brighton Hotel.  
 Josias, H., Pur. Agt., Cuba R. R., Brighton Hotel.  
 Kane, H., Gang Foreman Erecting Shop, B. & O., Monticello Hotel.  
 Kavanagh, W. J., Asst. Foreman, B. & O., Monticello Hotel.  
 Kerrigan, Frank, Ch. Cl., G. F. C. S., P. R. R.  
 Kerrigan, F. Jr.  
 Kimberly, P. R., Dennis Hotel.  
 Kincaid, B. M., Inspector Test Dept., P. R. R., Malatesta Hotel.  
 Kirby, H., Pipe Shop Foreman, B. & O., Mt. Clare Hotel.  
 Le Compte, J. V., Asst. Foreman Mach. Shop, B. & O., Whittle Hotel.  
 Longacre, Chas. J., Asst. Foreman, P. R. R.  
 McCaleb, W. B., Supt., P. R. R., Dennis Hotel.  
 McCracken, I., Car Foreman, P. R. R.  
 Machen, John, Asst. Foreman, B. & O., Monticello Hotel.  
 Mallan, T. L., Foreman Boiler Shops, P. R. R.  
 Malloy, M. A., M. M., W. J. & S. S., Monticello Hotel.  
 Markland, W. H., Gen. Shop Inspector, P. R. R., Dunlop Hotel.  
 Marsh, F. E., Asst. M. M., P. R. R.  
 Monahan, J. J., M. M., L. & N. R. R., Monticello Hotel.  
 Neubauer, J. G., Asst. Mgr., Union Tank Line, Young's Hotel.  
 Overby, C. C., Erecting Shop Gang Foreman, B. & O., Monticello Hotel.  
 Parks, J. W., Chief Clerk M. P. Dept., Vandalia, Dennis Hotel.  
 Porter, Chas. E., For. Frt. Shop, P. R. R., New Elwood Hotel.  
 Poulette, Paul, Chalfonte Hotel.  
 Powers, R. C., Foreman Machine Shop, B. & O., Whittle Hotel.  
 Ramage, J. C., Supt. Tests, Southern R. R., Chalfonte Hotel.  
 Reisinger, W. H., Jr., Genl. Foreman Car Inspectors, P. R. R., Biscayne Hotel.  
 Reploge, J. L., Asst. to Pres., Cambria Steel Co., Brighton Hotel.  
 Roce, F. C., Asst. P. A., J. G. White & Co., Shelburne Hotel.  
 Ryer, F. A., Asst. P. A., N. Y. C. & H. R. R., Shelburne Hotel.  
 Seearles, E. J., Asst. to Genl. S. M. P., B. & O., Shelburne Hotel.  
 Scatchard, H., Gen. Storekeeper, N. & W., Traymore Hotel.  
 Scheck, H. G., Road For. Engines, P. R. R., Monticello Hotel.  
 Shaffer, N. L., For. Ptr., No. Cen. R. R., Dunlop Hotel.  
 Steele, Frank M., M. M., N. Y. C. Lines, Monticello Hotel.  
 Stout, H. D., G. S. K., P. R. R., Elwood Hotel.  
 Stout, Master Albert W. P. R. R., Elwood Hotel.  
 Stout, Master Henry D., Jr., P. R. R., Elwood Hotel.  
 Strattan, G. E., Gen. For., P. R. R., Chalfonte Hotel.  
 Sweeley, E. H., Gen. For. Lo. Eq., Long Island, Windsor Hotel.  
 Toomey, T. H., Foreman Erecting Shop, P. R. R.  
 Van Daren, G. L., Supt. Shops, C. of J.  
 Warthen, J. O., M. M., D. & W., Westminster Hotel.  
 Wallace, J. E., Warwick Hotel.  
 Wetteran, J., For. Car Insp., P. & R., N. Florida Ave.  
 White, George DeWitte, Gen. Storekeeper, N. Y. Di. P. & R., Marlborough-Blenheim Hotel.  
 Woodruff, F. E., Ins. Train & Sta. Service, N. Y. Cen. Line, Windsor Hotel.

Convention attendants who during their visits to Atlantic City become accustomed to late hours, and who occasionally go to New York, may be interested to know that about Christmas the Pennsylvania Railroad will open on Times Square, New York City, a ticket office which will be kept open for 24 hours in each day. The vicinity named is the heart of the "Great White Way" district, and there is now no ticket office in the neighborhood.

## Proceedings.

President Clark called the third session of the Master Car Builders' Association to order at 10:15 A. M.

The president: The next business in order will be the reception and discussion of the report of the Arbitration Committee, on the decisions rendered by the committee and the report on the Revision of Rules of Interchange.

(Vice-President Curtis in the chair.)

The chairman: The secretary will read the report of the arbitration committee and the amendments made to the report at the committee meeting held yesterday.

### REVISION OF RULES OF INTERCHANGE.

Last year the committee was instructed to submit a rearrangement of the rules that would bring the related parts closer together. This has been done, and the recommendation of the committee is shown in the Appendix to this report. The suggestions as to revision of the Rules of Interchange are as follows:

*Preface.*—(a), that the third paragraph of the Preface be changed to read: "Inspection of freight cars for interchange and method of loading will be in accordance with this Code of Rules and the Rules for Loading Materials issued by this Association;"

(b), that Rule 2 be changed as follows: "Cars offered in interchange must be accepted if in safe and serviceable condition, the receiving road to be the judge in cases not provided for in Rules 3 to 56, inclusive, and if loaded, when loaded in accordance with the Rules for Loading Materials;"



J. J. Hennessey.

Chairman, Committee on Arbitration.

(c), the addition of a new rule: "Improperly loaded or overloaded cars—delivering company responsible." This rule is similar to provision (b), of Rule 15, of the American Railway Association.

*Rule 3.*—Add "Facing the 'B' end of car, the journal boxes in their order on the right side of car shall be known as R1, R2, R3 and R4, and similarly those on the left side of car shall be known as L1, L2, L3 and L4."

*Rule 4.*—Change to read: "Defect cards shall not be required for defects for which owners are responsible, except for missing material on cars offered in interchange, as provided for in Rules 27, 32, 35 and 42, or in cases of defective air-brake parts, as specified in the latter part of Rule 30. Defect cards shall not be required of the delivering road for improper repairs that were not made by it, with the exception of the cases provided for in Rules 29, 33, 43, 44 and 45."

*Rule 5.*—Change to "If a car has defects for which the owners are not responsible, but do not render it unsafe to run, nor unsafe to trainmen, nor to any lading suitable to the car, the receiving road must require that a defect card be securely attached to the car, as per Rule 3."

*Rule 6.*—Substitute the following: "Duplicate defect cards must be furnished promptly on request for lost or illegible cards."

*Rule 7.*—Change to read: "Shelled out: Wheels with de-

fective treads on account of cracks or shelling out spots 2½ in. or over, or so numerous as to endanger the safety of the wheel."

*Rule 9.*—Change as follows: "Worn through chill: When the worn spot is 2½ in. or over in length. Care must be taken to distinguish this defect from flat spots caused by sliding wheels."

*Rule 10.*—Change to read: "Worn flange, cast-iron or cast-steel wheel: Wheels under cars of less than 80,000 pounds capacity, with flanges having flat vertical surfaces extending 1 in. or more from tread, or flanges 15-16 in. thick or less, gauged at a point ¾ in. above tread. Wheels under cars of 80,000 pounds capacity or over, with flanges having flat vertical surfaces extending ¾ in. or more from tread, or flanges 1 in. thick or less, gauged at a point ¾ in. above tread. (See Figs. 4 and 4a.)

"Worn flanges: Forged steel or steel-tired wheels: Flanges having flat vertical surfaces extending 1 in. or more from tread, or flanges 15-16 in. thick or less. (See Figs. 4 and 4a.)" The committee suggests that the reference to Figs. 4 and 4a be changed as per proposed revision of Rule 21.

*Rule 11.*—Change last line of this rule to read, "standards of 1907 and 1909." The committee suggests that the reference to Fig. 2 be changed as per proposed revision of Rule 21.

*Rule 17.*—Reference to Figs. 6 and 6a be changed as per proposed revision of Rule 21.

*Rule 19.*—Change to read: "Flat sliding—cast-iron wheels: if the spot caused by sliding is 2½ in. or over in length. (Care should be taken to distinguish this defect from worn through chill.)

"Flat sliding—steel or steel-tired wheels: if the spot caused by sliding is 2½ in. or over in length. A defect card shall be furnished for the labor of turning. The delivering company shall also furnish a defect card at the time, to be forwarded to the car owner, covering loss of service metal."

*Rule 20.*—Change note under Fig. 4 to read: "For cast wheels under cars of less than 80,000 pounds capacity and all forged steel or steel-tired wheels with flanges 15-16 in. thick or less; cast wheels under cars of 80,000 pounds capacity or over, with flanges 1 in. thick or less."

Also change note under Fig. 4a to read: "For cast wheels under cars of less than 80,000 pounds capacity, and all forged steel or steel-tired wheels, 1 in. or more from tread; for cast wheels under cars of 80,000 pounds capacity or over, ¾ in. or more from tread."

Also, the dimensions 4 ft. 5 3-32 in., on Fig. 6a, be changed to 4 ft. 5 5-32 in. due to not mounting more than one wheel with maximum flange thickness on same axle, in accordance with Rule 66.

*Rule 21.*—The committee recommends a complete revision of this rule, in order to bring the various illustrations referred to closer together and in their regular order, as follows: The determination of flat spots, worn flanges and chipped treads shall be made by a gauge, as shown in Fig. 1, and its application to defective wheels, as shown in Figs. 2, 3, 4 and 5 (old Figs. 3, 4, 4a and 5 and accompanying notations). The determination of thick flanges for all wheels cast prior to the M. C. B. Standard tread and flange adopted in 1907 shall be made by a gauge shown in Fig. 6 (old Fig. 2), and for all wheels cast after January 1, 1908, shall be made by a gauge shown in Fig. 7 (old Fig. 2a).

*Rule 22.*—Recommends that subheading preceding Rule 25, reading, "Parts of trucks which justify repairs," etc., be changed to read, "Parts of cars which justify repairs if owners are responsible, or repairs or carding if delivering company is responsible," and that it be made the principal head, and the word "Trucks" be made a subhead.

		NAME OF ROAD						1 <sup>3</sup> <sub>8</sub>	M. C. B. STD.	
0	3	A		R		NAME OF MANUFACTURER				
		04	05	06	07	SERIAL NUMBER				
		1	2	3	4	5	6			
		7	8	9	10	11	12			
		1	2	3	4	5	6			
		7	8	9	10	11	12			

The above gives outline of modification of label. Extension being on right hand end.

**Rule 32.**—Change to read: "If the car has air signal or train-line steam pipes, the hose, pipes and couplings are at owner's risk unless the car is stenciled that it is so equipped."

**Rule 33.**—Change to "Cars equipped with air-brake hose other than M. C. B. Standard 1½ in. and labeled, as shown by cut on preceding page."

**NOTE.**—Cars will be accepted in interchange with 1½-in. M. C. B. standard hose and so labeled, if date is cut out showing application prior to September 1, 1909, or if date is not cut out and the label shows date of manufacture prior to September 1, 1909."

**Rule 35.**—Omit the sentence reading, "Also pressure retaining valves and pipe when damage to car denotes rough usage," as they are already included in the first part of the rule.

**Rule 37.**—Change to read: "All freight cars offered in interchange must be equipped with air brakes. All cars built after September 1, 1910, must be equipped with M. C. B. Standard 1½-in. train line and angle cocks," and that delivering company be made responsible.

The committee recommends that the subheading preceding Rule 38, reading "Parts of bodies which justify repairs," etc., be eliminated, inasmuch as the heading preceding Rule 25 has been modified to cover all parts of cars.

**Rule 38.**—Change first part of rule to read: "Locks, side doors, end doors, roof doors, grain doors, water troughs and attachments and all inside or concealed parts of cars missing or damaged under fair usage," etc.

Add paragraph as follows: "Steel cars offered in interchange not equipped with card boards for repair and defect cards (owners responsible)."

**Rule 40.**—Change to read: "Running boards in bad order or insecurely fastened. Sill steps, ladders, grabirons bent, broken, missing or insecurely fastened, except when car has been wrecked or sheathing raked. Handholds or grabirons must be of wrought iron or steel and secured by bolts, rivets or lag screws."

**Rule 42.**—And water troughs and attachments to the exceptions under this rule.

The Central Railway Club suggests adding, "or any car having tandem attachment found with pocket or single spring."

Neither of these suggestions meets with the approval of your committee.

**Rule 47.**—Add after "29" in line four, the figures "33," because wrong air-brake hose has been made a delivering company defect. Eliminate the words, "and also in case it should be necessary to replace stem or spindle with pocket attachment," and include in Rule 61.

**Rule 49.**—Change to read: "Damage to coupler body accompanied by damage to draft timber or its substitute or end sill."

**Rule 53.**—Committee recommends that the combined front and back coupler stop be cut out of this rule.

**Rule 56.**—Change to read: "Damaged corner and end posts if necessitating the renewal of, or repairs to, more than two posts."

The committee recommends the appointment of a special committee to propose at the 1911 convention a schedule of prices for labor and material covering repairs to steel cars; also to recommend a combination of damages to steel cars which denote unfair usage.

The recommendations of the Pittsburgh Railway Club suggesting the omission of the first note under this rule, also the omission of the last note relating to front and back coupler stops, are approved.

**Rule 58.**—Omit the words "and stubs" in fifteenth line.

The committee recommends the consolidation of Rules 58 and 59, inasmuch as both refer to the manner in which repairs shall be made to foreign cars, as follows: "Repairs to foreign cars shall be promptly made, and the work shall conform in detail to the original construction, and with the quality of material originally used, except as provided for in Rules 59 and 62."

**Rule 59 (new).**—"In repairing foreign cars, M. C. B. standards may be used when of dimensions that do not impair the strength of the cars, in lieu of the parts forming its original construction.

"When using materials for repairs to foreign cars for which the Master Car Builders' Association has adopted specifications as a standard, the materials must comply with the requirements of these specifications.

"Malleable iron, M. C. B. standards, may be substituted for gray iron, M. C. B. standards, but the net cost to car owner in such cases must be no greater than if the original kind and weight of material had been applied. Gray iron, M. C. B.

standards, may be substituted for malleable, M. C. B. standards, but in such cases the debits and credits must be for what is actually applied and removed. Repair cards must state kind of material applied and removed.

"When necessary to renew brake beams, any metal brake beam meeting M. C. B. specifications may be used, provided that the beam applied is as strong as the beam standard to the car and does not require any change in hangers or other details.

"Cast-iron brake shoes may be replaced with reinforced brake shoes in repairs to foreign cars.

"White pine, yellow pine, fir or cypress may be used when repairing siding on foreign cars when of equal grade and quality to the material standard to the car."

**Rule 61.**—The committee recommends a rearrangement of this rule, to cover the change of couplers as referred to in Rules 47, 61 and 62, as follows:

"Coupers of the vertical plane type other than M. C. B. standard, when replaced with M. C. B. standard, the expense of alteration thus necessitated shall be chargeable to car owners.

"Coupers with stem attachments may be replaced with pocket attachment.

"Coupers that exceed the distance of 5½ in. between point of knuckle and guard arm, measured perpendicularly to guard arm, must be repaired, in which case owners are responsible, except on cars offered in interchange. (See drawing.)

"When M. C. B. coupers of another make are applied to a car, the uncoupling arrangement shall be made operative at the expense of the company making the repairs."

**Rule 62.**—The committee, having transferred first sentence of this rule to Rule 61, would suggest a rearrangement of the last sentence, as follows: "In making repairs to foreign cars, the following materials shall not be used: Malleable iron coupers, open knuckles, malleable or steel backed filled journal bearings."

**Rule 63.**—Rearrange to bring the different items referred to together, as follows:

"The following information must be specified on the repair cards:

"M. C. B. coupers or parts of same applied, whether new or second-hand.

"Coupers applied and removed, the make and kind of material; also size of shank and butt.

"Knuckles applied and removed, whether open or closed.

"Wheels and axles applied, whether new or secondhand.

"Metal brake beams applied, whether new or secondhand.

"Journal bearings applied and removed, whether solid, filled or other kind; also length of bearings.

"Kind of brake shoes applied.

"If necessary to remove load to make repairs, as specified in Rule 114, it must be plainly stated."

**Rule 64.**—Add: "When bill is to be rendered, the height of car before and after altering must be shown on repair card."

**Rule 65.**—Mention should be made that sills must not be spliced between cross ties.

**Rule 66.**—The word "new" be cut out of first line of second paragraph.

**Rule 70.**—The last line of this rule be changed, to include the capacity, maximum weight or limit weight of the car.

**Rule 71.**—Insert the figures "1½".

**Rule 72.**—Rearrange rule, as follows: "If light weight of a car is obliterated or if found to vary more than 500 pounds from stenciled weight, the car should be reweighed and restenciled at owner's expense, and owner notified of old and new weights. Car must be cleaned before reweighing."

**Rule 73.**—Rearrange rule as follows: "Cars undergoing extraordinary repairs, such as sills, resheathing, roofing, etc., must be reweighed and stenciled by the company having the car in its possession. If the repairs are chargeable, the expense of reweighing and restenciling may be included in the bill, as per Rule 106."

**Rule 75.**—Change rule to read: "When two or more cars chained together with switch chains and couplers blocked out with metal spacing blocks are delivered at an interchange point, the receiving road shall deliver to the delivering road at the time, an equivalent number of switch chains and metal spacing blocks of the same size as the chains and blocks used on the cars delivered, or in lieu thereof furnish a defect card for such chains and metal spacing blocks."

The committee recommends a new rule, following Rule 75, covering the use of defect and repair cards and their location on car, as follows:

"The end of car toward which the cylinder push rod travels shall be known as the B end, and the opposite end shall be known as A end.

"Facing the B end of car in their order on the right side of car, the journal boxes or their contained parts shall be



Association of American Railway Accounting Officers should be observed when rendering or correcting bills."

Add the word "billing" in second line, and add letter "s" and omit words "and stubs" in same line.

*Rule 101.*—Eliminate, inasmuch as this provision is covered in Rules 94 and 107.

*Rule 102.*—Change the last sentence to provide that the credit for brake beam parts released from service in good condition must be fifty per cent of the prices when new.

*Rule 103.*—Omit the words, "the above list," and the substitution of the words, "Rules 89 and 94."

*Rule 105.*—Eliminate this rule and incorporate the prices for altering height of car and putting on handholds in Rule 94.

*Rule 106.*—The committee approves the suggestion that the note following draft timber bolts be inserted between center plate and column bolts. on page 54; the recommendation regarding center sills, as follows:

"1 center sill, spliced, per end, ordinary car, 16 hours; refrigerator car, 20 hours.

"2 center sills, spliced, same end, ordinary cars, 22 hours; refrigerator cars, 26 hours."

The recommendation regarding nuts, modified as follows, is approved:

"Nuts only, $\frac{1}{8}$ in. and under, replacing four or less, $\frac{1}{4}$ hour.....	\$0.06
Nuts only, 1 in. to $\frac{1}{2}$ in., inclusive, replacing one or two, $\frac{1}{4}$ hour.....	.06
Nuts only, $\frac{1}{2}$ in. and over, replacing one, $\frac{1}{4}$ hour.....	.06"

The recommendations of the Railway Club of Pittsburgh are approved, as follows:

"Brake connection rod or lever, one or both applied, $\frac{1}{2}$ hour.....	\$0.12
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Also, add "side sills" under the caption of "posts, corner, door, end or side, each removed, when associated with renewal of side sills, side or end plates."

Also, under the heading of "sills," change the word "replaced" to "renew."

Also, change last item on page 59 to read: "When necessary to remove load at one end of car to make repairs."

The committee recommends inserting item of bolts as heading for all bolts to be tabulated under this heading, as follows:

#### BOLTS.

Carrier iron bolts, three or less, at one end of car, applied.....	2	\$0.48	2	\$0.48
Carrier iron bolts, all at one end of car, applied.....	3	.72	3	.72
Carrier iron bolts, 4 in long or less, each.....	$\frac{1}{4}$	.06	$\frac{1}{4}$	.06
Center plate bolts, where same do not pass through draft timber, one or more, or all at same end.....	3	.72	3	.72
Center plate bolt or bolts and center plate, replacing, on one end of car.....	3	.72	3	.72
Column bolts, one or more, replaced in same truck.....	2	.48	2	.48
Coupler stop bolts, lug strap bolts or draft timber cross-tie bolts, 5 or less, at same end of car, when coupler is not replaced, each.....	$\frac{1}{2}$	.12	$\frac{1}{2}$	.12
Coupler stop bolts, lug strap bolts or draft timber cross-tie bolts, 6 or more, same end of car, when coupler is not replaced.....	3	.72	3	.72
Draft timber bolts, or carrier iron bolts, either or both, three or less, at one end of car, replacing.....	2	.48	2	.48
Draft timber bolts, or carrier iron bolts, either or both, four or more, at one end of car, replacing.....	3	.72	3	.72

*NOTE.*—If center plate bolt or bolts pass through draft timbers, it must be termed center plate bolt and charged three hours.

Journal box bolt, one or two, replaced, same box 1 .24 1 .24

The committee recommends the following additions:  
Handhold, removed and straightened, one.....  $\frac{1}{2}$  \$0.12  $\frac{1}{2}$  \$0.12  
Handholds, straightened on car, one or two...  $\frac{1}{4}$  .06  $\frac{1}{4}$  .06

*Rule 108.*—Add "Coupler lock."

*Rule 109.*—Inasmuch as Rules 109 and 110, and first paragraph of Rule 111, specify where no additional labor can be charged, the committee recommends the consolidation of these three items under the head of Rule 109. Add: "No additional labor to be charged for end siding when end plate or end sill under siding is renewed or replaced."

*Rule 111.*—Insert first paragraph under Rule 109. Change the second paragraph to read: "Where one or more carrier iron bolts over 4 in. long are replaced, where pocket coupler at same end of car is removed and replaced, the regular labor charge should be reduced one hour, except when one or both draft timbers are replaced."

*Rule 112.*—Add new item: "Triple cylinder bushing, renewed, \$1.12," and further it should be included in Rule 94.

*Rule 113.*—The committee suggests that the heading of the list of car prices reading "bodies—wood" be changed to read

"bodies of eight-wheel cars" for both wood and steel cars, and that the words "car—eight-wheel" be eliminated from each item under these headings.

Change third paragraph, page 69, to read: "Where the capacity of any car other than a gondola is 60,000 pounds or over, 10 per cent should be added to the above price for the car bodies."

Change fifth paragraph to read: "Where cars are equipped with metal center sills, the following prices should be added to the values of bodies for the cost of such sills:

"10 inches or less.....	\$60.00
Over 10 inches.....	80.00"

Also add: "Where cars are equipped with two metal draft members not less than 7 in. depth, continuous from end to end of car in combination with metal needle beams, \$30 shall be added to the value of body of car for the cost of such metal draft members."

Also add a new price, as follows: "Flat car, wooden floor, metal underframe, 8-wheel, 30 tons' capacity, 34 feet or over, \$500."

*Rule 115.*—The committee recommends that the item of "tank cars, except the tanks," be eliminated, and that a depreciation on tanks of tank cars of 5 per cent per annum be fixed in Rule 114.

*Rule 121.*—Suggests the elimination of the time limit of 60 days.

#### APPENDIX.

*Paragraphs 3 (a), 3 (b), 3 (c).*—Suggests that candles fuses and incandescent bulbs be as part of the lighting under line expenses.

*Paragraph 7.*—Change to read: "No labor charge shall be made for applying brake shoes, journal bearings, hose (air, steam or signal), mantels or tips, incandescent bulbs, charging batteries, or for icing, filling lamps, gassing tanks or coaling cars."

*Paragraphs 10, 10 (b), 10 (c).*—Change last paragraph to read: "Charge for terminal car heating to be 25 cents per day of 24 hours or less." This paragraph be made paragraph A of Rule 11, the present paragraph of Rule 11 to become paragraph B.

*Paragraphs 12 (a), 12 (b).*—Add another paragraph as follows: "(c) On electrically lighted cars a battery depreciation charge of 75 cents per day shall be made."

*Paragraphs 17 (a), 17 (b), 17 (c), 17 (d).*—After the word "car," in the first line of paragraph (a), add the words "not in line service." Also, after the word "car," in first line of paragraph (b), add the words "not in line service when." Also, in paragraph (d) the last phrase be changed to read: "the hose removed to accompany car and be reapplied when car leaves the line."

*Paragraph 21.*—Recommends that this rule be changed to conform to the same rule under the freight car rules.

#### LIST OF PRICES FOR MAINTENANCE OF PASSENGER EQUIPMENT IN INTERCHANGE.

The prices for journal bearings should be changed to conform to the freight car rules, as follows:

Journal bearings, brass or bronze, lined or unlined, per lb., applied.....	\$0.18	\$0.13
Journal bearings, filled brass or bronze shell, per lb., applied.....	.14	.10
Journal bearings; weights to be charged and credited as follows:		
7 inches and over, but not 8 inches long, lbs.....	.10	.6
8 inches and over, but not 9 inches long, lbs.....	.13	.8
9 inches and over, but not 10 inches long, lbs.....	.20	.12
10 inches and over, lbs.....	.25	.15
Journal bearings, cast-steel or malleable-iron back, credit for scrap, per lb.....		.04

*Nos. 19 and 20.*—To be combined to read:

"Cleaning baggage and mail cars, each..... \$0.50"

*Nos. 26 and 27.*—Suggests that this item be cut out of the rules.

*No. 30.*—Suggests that this item be changed to read as follows:

1-inch signal hose, applied.....	\$1.75
1 M. C. B. Standard 1 $\frac{1}{2}$ -inch hose, applied.....	2.00

It is suggested that the price of mantles and gas tips be the cost price.

*No. 59.*—To be changed to read:

"Wheels, steel, new or re-tired..... Cost."

*No. 60.*—To be changed to read:

"Loss of metal from steel or steel-tired wheels, \$1.50 per 1-16 inch..... \$1.50"

(This price will cover the value of wheels when new.)

*No. 62.*—To be changed to read:

"Removing, turning and replacing same pair steel-tired wheels..... \$5.00"

*Freight Rule 89.*—New price to be inserted as follows:

"New Price.—Turning steel-tired wheels, per pair.....\$1.50"

No. 63.—Steel-tired, cost of re-tiring, should be cut out, as the proposed correction to No. 59 will cover.

No. 24.—The introduction of two items immediately following item 24, as follows:

"Electrical material, incandescent bulbs, fuses, etc.....At cost."

"Electric current for charging batteries.....At cost."

The secretary read the first portion of the report relating to the decisions rendered, and moved that the report of the arbitration committee on decisions rendered, Nos. 775 to 809, which have been distributed through the year, be approved by the convention. The motion was carried.

The secretary submitted the following supplemental report:

#### SUPPLEMENTAL REPORT OF ARBITRATION COMMITTEE.

In accordance with notice given at the sessions yesterday, a meeting of the arbitration committee was held at the Marlborough-Blenheim Hotel last evening at five o'clock, at which representatives of the various railways were present. The chairman of the committee stated that the meeting was called to discuss in an informal manner the recommendations of the arbitration committee in its report to the convention, so that a better understanding might be had thereof. Several suggestions were made and discussed pro and con by those present, and as a result thereof, the arbitration committee offers the following modifications to its report, and suggests their adoption in lieu of those printed in the report:

*Old rule 33 (new rule 58).*—"The label for air hose has been criticised, it being stated that some of the figures, especially the dimensions 1½ in. became illegible after being in service and subject to wear. It is recommended that this matter be referred to the committee on Train Brake and Signal Equipment, with the suggestion that the label be redesigned, making it as legible as possible, but retaining all the information now on the label."

*Old rule 40 (new rule 52).*—"The committee recommends that in lieu of what was formerly suggested, the rule to be changed to read: 'Running boards in bad order or insecurely fastened, sill-steps, ladders, grab-irons, bent, broken, missing or insecurely fastened except when car has been wrecked, corrugated or raked.'

"Handholds or grab-irons must be of wrought iron or steel, and secured by bolts, rivets, or lag screws."

*Old rule 75 (new rule 47).*—"In view of the action taken by the convention, on the subject of metal spacing blocks, the committee withdraws its recommendation as made under this rule, and suggests that the rule be allowed to remain as in the present code.

*Old rule 89 (new rule 101).*—In its report to the convention, under old rule 89, the committee did not make any recommendations, it being agreed that the matter of loss of service metal would be given consideration and a recommendation made here. In order to make the matter clearer, the following suggestions are now proposed:

*Old rule 19 (new rule 68).*—Eliminate the last two sentences of the proposed additions, making the rule read: "Flat sliding cast-iron wheels: If the spot caused by sliding is ½ in. or over in length. (Care should be taken to distinguish this defect from *worn through chill*.) See Fig. 2."

"Flat sliding, steel or steel-tired wheels; if the spot caused by sliding is ½ in. or over in length."

*Old rule 89 (new rule 101).*—1. In the table in this rule, it is suggested that the third item reading, "One 33-in. steel or steel-tired wheel," be changed to read, "One 33-in. forged or rolled steel wheel"; that the price now be changed to \$24 instead of \$23; that the second-hand price \$17.25 be eliminated, and that there be no change in the scrap price, viz. \$5.

2. That the last paragraph of this rule, shown at the top of page 46 of the Code of Rules, be changed to read: "The price for new forged or rolled steel wheels shall only apply to such wheels having treads 1½ in. thick or over, measured from the witness groove. For wheels having treads less than 1½ in. thick as described, a reduction shall be made in price at the rate of 80 cents for 1-16-in. thickness of tread."

"For loss of service metal from forged or rolled steel wheels on account of defects for which the delivering company is responsible, credit shall be allowed the owners of the car at the rate of eighty cents for 1-16-in. thickness of tread."

"If there is any reduction of service metal on forged or rolled steel wheels removed from foreign cars, the proper credit for it must be given the owners, except when owners are responsible for such loss of metal from wheels turned

off, either on account of owners' defects or defect card issued by the owners. When credit is allowed the owners for loss of service metal as noted, if the repairs are covered by defect card of another company, offset cards to cover such credit may be rendered on the defect card by the company making the repairs, giving reference to bill in which credit was allowed the owners as authority for the charge. In cases of solid flat wheels, 1-16 in. for loss of service metal will be allowed for flat spots 2½ in. long, and 1-16 in. for each additional inch or fraction thereof.

"If there is any increase in the amount of service metal on forged or rolled steel wheels applied, charge may be made for the amount of same, at the rate given above, in cases of owners' defects, or on authority of defect card of delivering line, except when repairs are made by owners."

*Old rule 92 (new rule 103).*—It is suggested that a new paragraph be added in addition to the changes already suggested, making the rule read as follows: "Bills or statements which do not embody all the information called for by the headings of the columns may be declined until made to conform to the requirements of the rule. In all cases of forged or rolled steel wheels, the repair card must show the actual thickness of tread, before and after turning off, measured from base line of tread to the condemning limit of tread, which is ¼ in. above the witness groove; also show actual thickness of tread on other wheels applied. This information must be reported to car owners, regardless of whether repairs are chargeable or not."

The above will cover the matter of service metal from steel wheels, and, while the phraseology of the recommendations made may be subject to some slight modification, the points that have been raised are fully covered.

*Old rule 114 (new rule 121).*—Another subject presented to the committee yesterday was the subject of depreciation allowable on the tanks of tank cars. The suggestion offered in its report, that this depreciation should be 5 per cent. is hereby withdrawn and the following substituted: "The depreciation on the tanks of tank cars for handling non-corrosive substances shall be 4 per cent per annum; for tanks of tank cars handling corrosive substances, the depreciation shall be 5 per cent per annum."

#### PASSENGER CAR RULES.

*Rule 3-c.* Several suggestions have been received since the report was prepared proposing the introduction of gas tips, mantles, gas bowls and globes as line expenses under the head of lighting. Inasmuch as the committee on Train Lighting has thoroughly investigated the matter and made certain recommendations for incorporation in the rules, which recommendations have been approved by the committee, we can not approve the further suggestions that have been received.

#### DISCUSSION ON RULES OF INTERCHANGE.

The Secretary: The supplemental report of the arbitration committee should be considered in connection with the printed report.

F. W. Brazier (N. Y. C. & H. R.): I move that the report of the arbitration committee be accepted and adopted, which includes the acceptance of the decisions rendered by the arbitration committee. The motion was carried.

F. W. Brazier: At this time I think it would be proper to make another motion relating to this report. I think many of the members do not realize the amount of work and time that the arbitration committee has put in—to my knowledge, five or six days in Chicago—and I think they are entitled to a vote of very strong thanks, because they really are our Supreme Court. I move that we give the arbitration committee a rising vote of thanks for this report and for the arduous duties performed in the past year.

The Secretary: The arbitration committee has held five sessions for the preparation of its report, which has been presented to this meeting.

The Chairman: This motion is timely. The arbitration committee certainly does a lot of work and are entitled to a good deal of gratitude on the part of the members for the valuable work they do.

The motion was carried.

Mr. Hennessey: On behalf of the arbitration committee I would say that the vote of confidence which has just been passed is fully appreciated. The duties of the arbitration committee are not pleasant. In every case that is arbitrated, one side must lose. For every recommendation that is made there are usually a half dozen conflicting recommendations. We have tried to do our duty under all conditions and circumstances. I want to thank the convention for this vote of confidence.

(President Clark in the chair.)

W. F. Bentley (B. & O.): At the meeting of the arbitration committee yesterday, I was requested, after the adoption of

the rules, to bring to the attention of the convention certain difficulties which the different inspectors are experiencing in endeavoring to find the label of the size and marking on the hose badge by reason of its location. Sometimes, unless the inspectors uncouple the hose, they must lie on their backs to read it.

Several roads have already taken steps to place the badge so that the inspectors can read it very readily in approaching the hose; that end is being accomplished by placing the reading on the hose in a different position, and instead of placing it upside down, they are turning it around on the quarter, so that when the hose is coupled up the inspectors can read it.

It was thought by bringing this subject to the attention of the different representatives of the railways at this convention they would give it some consideration after they get home, and see to it that the badge on the hose is so placed that the inspectors can save time in inspecting the trains in reading the hose.

The President: That seems to be a good suggestion. It would appear easy to fit up the hose, as suggested by Mr. Bentley, so that the inspectors can read the badge conveniently.

Mr. Hennessey: It seems to me to be a recommendation of considerable importance. It would cost a railway company no more money to mount the hose so that the label could be easily read than it would to mount the hose in any other way. I move that each member of the Master Car Builders' Association, when he returns home, take up these matters with the hose mounting department, and instruct the men in accordance with the suggestions of Mr. Bentley.

The motion was carried.

#### MISUSE OF THE M. C. B. REPAIR CARD.

The following letter from W. H. Lewis, superintendent of motive power, Norfolk & Western, under date of May 24, 1910, was read:

Since some reference was made last year to the apparent misuse of the M. C. B. repair card, and inasmuch as some reform in that direction seemed so manifestly desirable, if not necessary, no doubt many investigations along these lines have been pursued, all of which tend to have their moral effect for the betterment of conditions.

Unquestionably there has been some improvement in the exercise of fairer practices, and a close check has enabled us to note a most remarkable change for the better at some of the larger interchange points; but there is still a great deal of room for improvement, and doubtless the question is one that will require constant vigilance at all times. Where the subject of the abuse of the repair card has been treated with a great deal of stress and laid before the inspectors and men on the ground, they have profited thereby and good work has been accomplished, but in many places it has been set aside by officers or foremen on the assumption that their men could hardly be guilty of unfair practices.

The trouble is this—the inspector seems prone to sharp practices, probably as a vent for some advantage he considers or imagines has been taken by the inspectors for the other roads, but these practices unfortunately extend or result in distortion of fair and very well defined rules and principles, and in the end the railways have to suffer the consequences.

At the conclusion of the discussion last year, it was recommended that specific cases should be reported to the executive committee for an investigation. That probably was the wisest action at that time, but it is very much doubted whether any one would wish to make a specific charge in such matters, and it is quite natural they should shrink from making prominent any failure or unfair practice on the part of men that would probably result in a reflection upon the management in which they have personal friends associated. While there has been an improvement, I am not so sure the proposition which was made last year for the appointment of a committee to go around through the country to investigate the practices in different yards for the purpose of obtaining uniformity and the proper interpretation of the rules, would not be productive of a great many benefits.

During the year, some comments have been made upon the use of the repair card by the Individual Car Owners' Association. It was very evident they had failed to gather the line of thought prompting the remarks that had been made on the part of the Master Car Builders' Association. In the paper circulated by the Individual Car Owners' Association, a resolution was presented endorsing the inequalities or unfairness of charges, assuming that to be the purport of the remarks on the part of the members of the Master Car Builders' Association, in fact, reference was made to the report presented to the association last year in support of their position. As a matter of fact, the Master Car Builders'

rules represent the result of years of hard work and in principle are correct and equitable. It would therefore be wrong to consider their non-observance a fault of their precepts or provisions, or that it makes them any the less valuable, hence any specific infraction of the rules should be handled locally and between the parties at interest.

There is another phase in connection with the use of the card to which attention might now be profitably directed. Rules 76 and 77, of the M. C. B. code of interchange, specify that when repairs of any kind are made to foreign cars a repair card measuring  $3\frac{1}{2} \times 8$  in., and bearing certain printed matter on both sides is to be filled out, using black ink or indelible pencil, stating in full the work performed, etc., and, again, while the defect card has a note thereon stating that it is to be securely fastened to the car with four tacks, the repair card carries with it no such requirements.

In the first place, the size and specific form of the card is far from being uniformly followed by all roads. In many instances they are made from very inferior paper instead of card board, which fact has added very much to the difficulty in retaining the record or writing placed thereon. Then there are many forms of cards, differing in one detail or another, and just enough not to agree with the M. C. B. standard; again, some have the printed matter on but one side. Perhaps as a result of this latter condition, or carelessness on the part of the men in the yards, at least 85 per cent of the cards are filled out on but one side and practically the same proportion is secured to cars with but two instead of four tacks; in some instances defect as well as repair cards have been found secured with but one tack. Again, these cards are usually made out with lead pencil instead of ink or indelible pencil as prescribed, hence it is but a short time before they are very difficult to decipher.

Notwithstanding the cards are to specify fully the repairs made, they are often very indifferently filled out. On many, the end of the car upon which the repairs have been made will not be mentioned, neither will the size nor kind of material used be indicated and often the cards are not signed by the inspectors or dated, nor will the place of their application be mentioned. It is estimated that perhaps 40 per cent of the repair jobs are not carded for. Rule 63 calls for certain information on the repair card and stub, yet bills are being presented daily with many omissions. If no bill is to be rendered the repair card should be sent to the owner on or before the twentieth of each month, bearing the words "No Bill," written across the face of the card and cards are supposed to accompany the bills for many of the small repair jobs; still the number made out improperly in this respect is remarkable.

It is confidently believed that if any one will take the time, say thirty days, and closely examine all foreign cards removed from their equipment, they will soon satisfy themselves that there is still room for a great deal of improvement in the matter of filling out and handling cards generally, all of which we consider is well within our power to correct and when corrected would vastly improve the situation and very materially reduce a great deal of unnecessary clerical work.

W. H. LEWIS.

The President: A year ago Mr. Lewis presented a communication on the abuse of the repair card, and this is in the same connection.

Mr. Hennessey: While there has been an apparent improvement during the past year on account of the very earnest discussion in connection with this subject at the last convention, there is still much room for further improvement. If the members of this association would talk on this floor as they write to the Arbitration Committee, I think they would talk the balance of the day on this subject; but it seems when they come here and must look a man squarely in the eye they do not have the moral courage to say what they say to the members of the Arbitration Committee. They write us that such and such roads are not applying repair cards. I understand, of course, that the resolution that was passed last year gave them the right to take this matter up with the Executive Committee, but it seems, as Mr. Lewis says, that they do not like to make these direct charges personally. There are others who go so far as to say that bills are rendered to them for work that has not been done. Now, the life of this association depends entirely on the honesty of its members—everything should be done by every member of this association to secure the most absolute honesty in these matters. If any master car builder has subordinates who are inclined to adopt tricky practices or customs to keep down the expenses, that man should be called. I do not believe for a minute that there is any head of a car department in America who encourages such practices, or who would for a moment retain in his employ a man who indulges in them if he knew that this thing was going on, but it is believed by many that it is a custom of some roads not to put

on the repair cards, and in cases not to make the repairs at all, but to render the bills.

Jacob Christopher (T. H. & B.): The road I am connected with is today holding six cars. We have held them for six months waiting for the representatives of a certain road to come and give us evidence to substantiate certain bills for repairs which have been charged against our road. We have the evidence that we were charged for brasses, drawbars and brakebeams, and we have positive evidence that the brakebeams and brasses were never removed. We have several other points of evidence bearing on the same bills, and yet we have not been able to get the parties interested to come and pass on the cars and verify the bill. We are holding the cars so that we can stand pat on the point we take. We have been charged for material and labor that never was furnished.

F. W. Brazier: I said last year, and I repeat it now, I want every cent that belongs to the New York Central, but we do not want one penny that does not properly belong to us. If you instruct your subordinates to that effect, there would not be any further complaints in this connection.

F. H. Stark (Pitts. Coal Co.): There is one detail that might stand investigation, that is the cleaning, oiling and testing of air-brakes. We have only a small equipment and are able to check the repairs made more closely than most roads. It is interesting to find how frequently air-brakes become dry and dirty. We have some cases where they are cleaned twice by the same road at the same station on the same date. It is common practice to have them cleaned more than once in thirty days. If the air-brakes are cleaned, oiled and tested, and in 10 days the brakes are not operative and the triple is taken down, and it is found that some repairs are necessary, a charge is invariably made, in addition to the repairs, for the cost of cleaning, not only of the triple, but of the cylinder. It would seem that if a triple passes inspection and a charge is made by one road, and it becomes inoperative in a month, that the owner might properly be charged with repairs, but it does not seem right that he should be charged with the cleaning. This is a matter that each one of us should consider for ourselves, and it would be a good idea if, in addition to the date of cleaning, the road should be required to put its initials on the cylinder so as to indicate who did the work. That would assist in tracing the matter. This may seem like a small matter, but if you really knew how many duplicate charges you are paying for, you would take a greater interest in the matter.

Mr. Schroyer: We started to check up on our equipment of sixty thousand cars, the cleaning that had been done on all the triples, where it had been done, by whom and when. My attention for one whole year has not been called to any such condition as Mr. Stark describes. As to cleaning the car twice in one day, that may be a case of two men working on piece-work and each of them turning in a slip for the cleaning of the car. The worst thing that has come to my attention in connection with the handling of cars and billing for work supposed to have been performed, was certain instructions, which were supposed to have been issued by the head of the car department to the inspectors and repairers at interchange points, to the effect that they must perform work enough and get cars enough from the connecting line to pay their salaries.

Mr. Stark: I can send Mr. Schroyer hundreds of repair cards verifying what I have stated.

H. L. Trimyer (S. A. L.): We have the remedy in our own hands, as we have been instructed to bring such matters to the attention of the executive committee. If we did this, some action would be taken to stop the trouble. On the road with which I am connected we have had some bills refused payment on account of no repair cards attached to the cars. We proceeded to remedy the trouble, and possibly if we did that a little more, we would get better results. In addition, I have had a lot of correspondence in regard to improper bills, claiming repairs made which were not made. If we would bring some of these well defined cases which have been referred to, to the notice of the executive committee and some action was taken by the executive committee, we would have no further trouble. As far as the Seaboard Air Line is concerned there has been a wonderful improvement since the action last year. A close checking of our repair bills shows some discrepancies, and many were brought to our attention which we proceeded to remedy. We have instructions out that we will discharge any man in the service who sends in a report claiming repairs which have not been made, and we cannot take any further action until such matters are referred to us. If a case where there is sufficient evidence to justify the charge is referred to the executive committee, and some road is penalized for violation of the rules, it will stop the whole business.

A. E. Manchester (C. M. & St. P.): I have discovered what

I felt was a case which should go to the executive committee, a case which seemed to justify such action more than a number of the cases which have been mentioned. In each instance where it was a clear case it would come back to us and be reported as an error, a clerical error. When you get that kind of a report, and the party withdraws his bill or corrects his bill, you have nothing to take to the executive committee. When you catch that same condition coming from the same road with great regularity, it at least leads to a suspicion that there is undue carelessness that ought to be corrected.

Morris La Rue (C. R. I. & P.): There is one point which has not been touched on; that is, in interchange some roads will make a claim for a defect card or missing material, and after the card is on their line they bill the owner for the same material that they have asked a defect card for. That may be honest, but it looks to me as if the man who would do it is too crooked to sleep in a round house.

C. E. Fuller (U. P.): The members of this association should be ashamed of themselves. We are charged with the maintenance and repairs of cars, and if we are crooked we ought to be straightened out. The members were requested to file any cases they had with the executive committee. During the last year there was only one case brought up, which would indicate one of two things—either that the members are unduly suspicious of one another, or else they are afraid to present their cases. It does not seem to me that the question of mistakes ought to be charged as dishonesty. I presume the line that I represent sends out bills that are questioned; in fact, I know we do. We receive bills that we question, and we do not charge dishonesty. The only time we charge dishonesty is when we know the work has not been done. We have not had a case in the last year that we felt was a case of dishonest work. Too much has been said on the subject, and the members should do as they are requested and file their cases. If there is any member of this association that is paying the salary of his card department by dishonest billing, I believe we can stop it; and the only way to stop it is to give us the ammunition. I move that the members of this association give the executive committee the cases, if they have any, by letter.

F. F. Gaines (C. of Ga. Ry.): We may be morally certain that we are getting dishonest bills. If there was some way by which we could identify actual cases of dishonesty, which I know from my personal experience are still going on, there might be more cases referred to the executive committee. It is pretty difficult to get your evidence.

Eugene Chamberlain (N. Y. C. & H. R.): The superintendents of car departments and of motive power have been derelict in their duty. It is not the case of the inspector. This action seems to have produced up to the present time simply a moral effect, and it has not gone any further with one case only before the executive committee. It seems to me that the motion of Mr. Fuller is very pertinent at this time, that the superintendents of motive power and of car departments may not continue to be derelict in their duty, but that they may get after these cases.

The motion was carried.

#### COUPLER AND DRAFT EQUIPMENT.

The committee submits the following report:

##### SPECIFICATIONS.

*Size of Eyelet for Lock-lift Device.*—In order that the text of the Standards for Automatic Couplers may agree with Sheet 23, it is necessary that the size of eyelet in locking device be added: "That all couplers must have a 1 1-16-inch eyelet for unlocking device located immediately above locking pin hole."

*Gauges for Knuckle Pivot Pins.*—The first sentence in the third paragraph of the specifications for M. C. B. automatic couplers should be changed so as to include knuckle pivot pins.

*Use of Knuckle-throwing Devices.*—The requirement providing that the coupler must be equipped with an efficient knuckle-throwing device has been a Recommended Practice for a period of five years, and nearly all of the modern couplers in use to-day are provided with some form of knuckle-throwing device. While all of the knuckle-throwing devices in use are not as efficient as the committee believes they should be, it feels that this requirement should be advanced to Standard, incorporating the following: "All couplers must be equipped with a knuckle-throwing device which will throw the knuckle completely open from any position it may assume in service." If this recommendation is adopted as Standard it should be embodied in the Standards in Section 4 of the Specifications for M. C. B. couplers after September 1, 1911, thereby giving time to the manufacturers of couplers which do not at present meet this re-

quirement to improve their models to conform with this specification.

*Lock-bearing Area.*—The question of adopting a minimum allowable area of effective bearing surface between the knuckle tall and lock, and stipulating that there shall be at least as much bearing between the lock and wall of coupler, has been presented to the committee, with a view of making that minimum as large as possible, in order to



R. N. Durborow.

*Chairman, Committee on Coupler and Draft Equipment.*

insure a better distribution of pressure and consequently a less rapid wear. The committee suggests that 4 square inches be adopted as the minimum allowable area of these bearing surfaces. Of course, a larger bearing surface is desirable, but in fixing 4 square inches as a minimum at this time the committee feels that no great hardship will be imposed upon manufacturers of existing types of couplers, and that as conditions improve this limiting area may be increased.

*Twist Gauge.*—The twist gauge shown on the present M. C. B. Sheet "C" should be abolished, as it has not proven useful. After an extended trial it has been found that any distortion of the coupler which this gauge would indicate could easily be detected by the eye, and, therefore, the use of the gauge was discontinued.

**Shelf Brackets.**—The committee desires to call the attention of the members to the fact that shelf brackets, designed to hold the uncoupling lever in a raised position, are still in use by a number of roads, on cars which are equipped with couplers conforming to the present standards. These brackets were to be abolished in accordance with the letter ballot of 1907 and, therefore, should not be allowed to remain on cars having standard couplers for the following reasons:

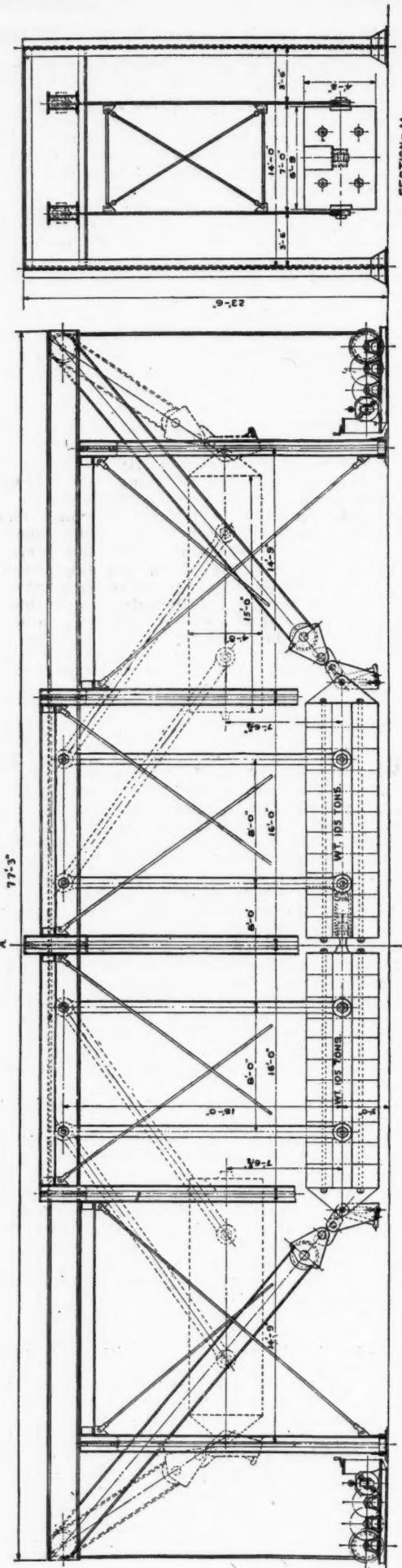
First: That it destroys the feature of the lock set within the head of the coupler; in other words, when the lever is locked in a raised position it must be released again by hand before coupling can be effected.

Second: The use of the inclined shelf bracket allows the rods to be locked in a raised position so that the chain is frequently taut. In case of couplers equipped with a knuckle-throwing device, when the knuckles are closed, the tail of the knuckle will strike the opener, and either bend it out of line or break the uncoupling chain. This is more pronounced in couplers where allowance is made for play of  $\frac{3}{8}$  inch behind the tail of the knuckle, as recommended in the specifications.

## **FRICITION DRAFT GEAR.**

*General Review.*—The report of the committee last year called attention to two means of obtaining definite information desired concerning the performance of draft gears, namely, by means of a series of road tests with accurate recording apparatus, and the design of a laboratory testing apparatus which will subject the draft gears to approximately the same pressures and shocks received in service. After careful consideration, the conclusion was reached that the results to be obtained from both investigations could be combined in the latter, providing the action of the draft gears in such a laboratory testing apparatus would approximate service conditions, with the additional advantage of saving time and expense of making actual road service tests.

To make a series of service tests would necessitate equipment and expense of making actual load service tests.



## Proposed Pendulum Test Machine for Friction Draft Gears.

ping trains composed of cars of various types with each kind of draft gear in turn, with resulting loss of time in applying each set of draft gears during a period when there may be a great demand for cars, to say nothing of the expense involved. The possibility of using a drop-test machine, using either the standard M. C. B. weight of 1,640 pounds or a heavier one, was considered, but the action of the draft gears under the forces of impact delivered by such a machine was found to differ greatly from their action in service, making this form of drop test undesirable. The use of any kind of static machine would be unsatisfactory, because the load is applied slowly and does not approximate service conditions.

**Draft Gear Testing Machine.**—In order to place the draft gears in a laboratory testing machine to undergo service conditions, a machine has been designed on the principle of the double pendulum. Each pendulum weighs 210,000 pounds, which represents the probable maximum weight of a car and lading which will be encountered in service. Provision is made for swinging each pendulum through an arc sufficient to give a maximum speed of fifteen miles per hour when at the lowest point of swing, so that with one pendulum at rest and one in motion speed up to that is obtainable, and with both pendulums in motion a maximum speed at the point of contact of thirty miles per hour is available. By using the pendulums many uncertain variables are eliminated, such as the motion between trucks and car body, the shock absorbed by the truck springs, resistance offered by wheel flanges on curves, etc., which would interfere with satisfactory observation in a road service test. The resistance offered to each blow and the force of the blows delivered at the different speeds is constant for each draft gear, making the results directly comparable.

In the illustration a draft gear is shown mounted in one pendulum, the other being simply a solid weight with a buffing surface provided at the end. The draft gear to be tested is equipped with a dummy coupler shank having a flat face which is just in contact with the buffing surface on the other pendulum, when both pendulums are hanging at rest. The movement in either direction of both pendulums, and the movement of the coupler shank in the carrier iron, that is, the movement of the draft gear in either direction, are to be accurately recorded by an oscillograph having a suitable time element, so that distance, velocity and acceleration at any point of swing or recoil can be determined. The records of the motions of the pendulum are obtained electrically from a contact point on each pendulum passing over a series of fixed contacts in the path of swing. The record of the motion of the draft gear is obtainable in a like manner through each  $\frac{1}{8}$  inch of travel by a contact on the dummy coupler shank passing over a series of fixed contacts in the carrier iron. The pendulums are drawn back to the proper starting positions to give any desired speed, by motor-driven cables, fastened to the weights by hooks which can be released simultaneously by one electric key. The same key which releases these hooks starts the motion of the oscillograph.

Theoretically the difference between the sum of the travels of the pendulums, from the point of release to the point of contact, and the sum of their recoils, will be a measure of the shock absorbed by the draft gear, and, therefore, of the efficiency of the draft gear. Thus, a draft gear having a low recoil would indicate a high absorption of shock and vice versa. The pendulums are necessarily built-up weights, consisting of cast-iron segments, machined to a smooth fit, held together with tie bolts and the longitudinal framing to which the trunnions for the hangers are fastened. Provision has been made in the striking end to accommodate all the types of draft gears to be tested.

The committee regrets that it has been unable to perfect the machine in time to have had a series of tests made during the past year, but expects to have the machine set up and make a series of tests of all kinds of friction draft gears now on the market, submitting a complete report at the convention of the year 1911.

#### SUMMARY.

The insertion of the 1 1-16-inch dimension for eyelet in locking device is referred to the Secretary, as it has already passed the letter ballot.

A summary of the recommendations which your committee offers to be submitted to the letter ballot, to be adopted either as Standard or Recommended Practice, is as follows:

#### Specifications for Automatic Couplers.

1. That the first sentence in the third paragraph be changed to read, "Bars, knuckles, locking pins or blocks and knuckle pivot pins must be accurately made to gauges furnished by the manufacturer."

#### Recommended Practice.

1. That the use of the twist gauge be abolished, and the cut removed from Sheet "C."
2. That the minimum effective area of lock-bearing surface, on knuckle tail, shall not be less than 4 square inches.
3. That the effective area of bearing surface between the lock block and coupler wall shall be equal to or greater than the effective area of lock-block bearing on knuckle tail.

The report is signed by: R. N. Durborow (P. R. R.), chairman; G. W. Wildin (N. Y. N. H. & H.), F. W. Brazier (N. Y. C. & H. R.), T. H. Curtis (L. & N.), F. H. Stark (Pitts. Coal Co.), Thos. Rooth (C. B. & Q.), and W. E. Symons (Consulting Engineer).

#### DISCUSSION ON COUPLER AND DRAFT EQUIPMENT.

Mr. Stark: The pendulum device is such that a friction gear may be applied to both pendulums, and thus have two gears in action.

The report was adopted and referred to letter ballot.

#### CAR WHEELS.

We presented at the last convention revised drawings for the flange and tread contour of all wheels and a revised design for the 625-pound wheel with corrected specifications covering the three wheels. The committee has held several meetings during the year, two of them being joint meetings with the car-wheel manufacturers, and from the reports of the manufacturers and what we have heard from other lines, the indications are that a larger number of roads have adopted



William Garstang.

Chairman, Committee on Car Wheels.

the new 1909 wheel than have previously purchased wheels made to the M. C. B. design. We learned from the manufacturers that they are rapidly getting in position to furnish the new wheel with the revised tread and flange, and that their orders justify making the change as rapidly as possible. In view of the fact that the 1909 wheel has been so favorably received and that nothing has occurred to justify considering a change in the design, the committee has no recommendations to make covering the wheels or specifications.

We have received some communications during the year requiring attention, which have been handled as follows:

Attention has been called to the maximum flange thickness gauge, Sheet M. C. B.—16, not showing sufficient dimensions to accurately lay out the gauge. To correct this, we submit a new drawing of the gauge (Fig. 2a, Fig. 2b), which is not changed, but has additional dimensions shown.

The committee finds that there is no maximum allowable height of flange specified for cast-iron wheels, so as not to damage track crossings and frog filling blocks, and the committee would recommend for this dimension  $1\frac{1}{2}$  in., which is the same as has already been adopted for steel and steel-tired wheels, as shown in cuts on pages 98, 99, 100, and 101 in the 1909 Interchange Rules.

The attention of the committee has been called to the fact that brackets used on existing wheel circumference measuring tapes were made to conform to M. C. B. standard tread and flange contour prior to modification of same at 1907 convention, and it is the recommendation of the committee that

these brackets be replaced with a form of bracket to suit the tread and flange contour adopted in 1909, and we enclose herewith drawing Fig. 2c, showing the proposed new bracket, and recommend its adoption.

R. L. Kleine, chairman of the Committee on Standards and Recommended Practice, also forwards a letter relating

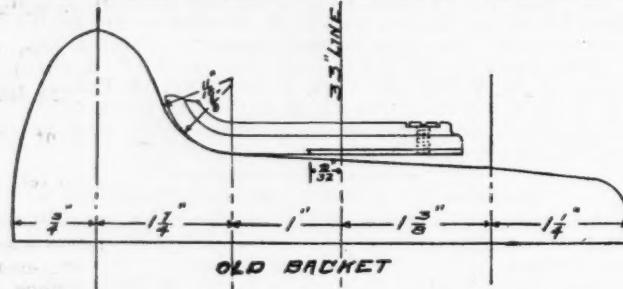
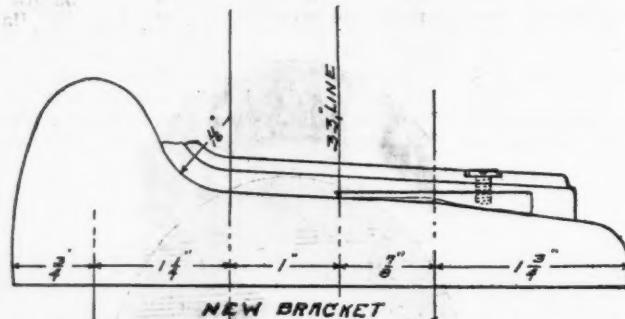


Fig. 2a.—Maximum Flange Thickness Gage.



to the diameter of new all-steel or steel-tired wheels, and the limit in diameter to which they should be turned when used in freight service. This is an important matter, which affects the trucks, brakes, height of couplers and interchange bills to an extent that the committee feels is out of their

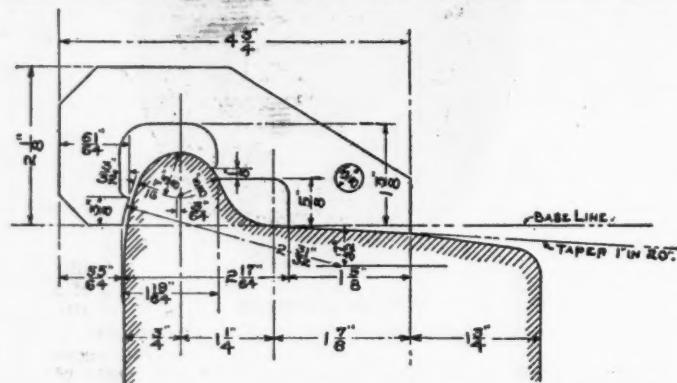


Fig. 2c.—Proposed New Bracket.

jurisdiction, and suggests that it be handled by a special committee.

We have a communication from the Wheel Manufacturers' Association, which has been under consideration for several months, but we can not recommend to the Association the

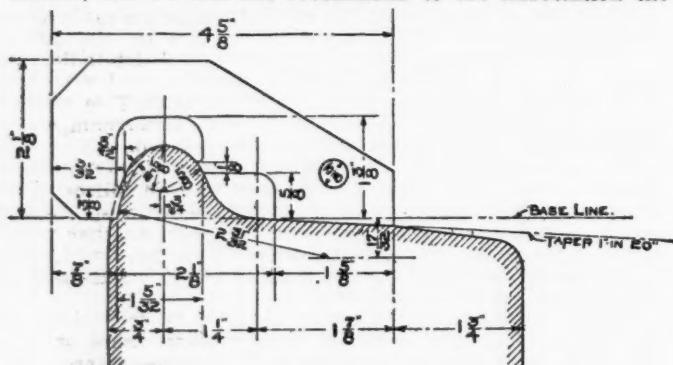


Fig. 2d.—Proposed New Bracket.

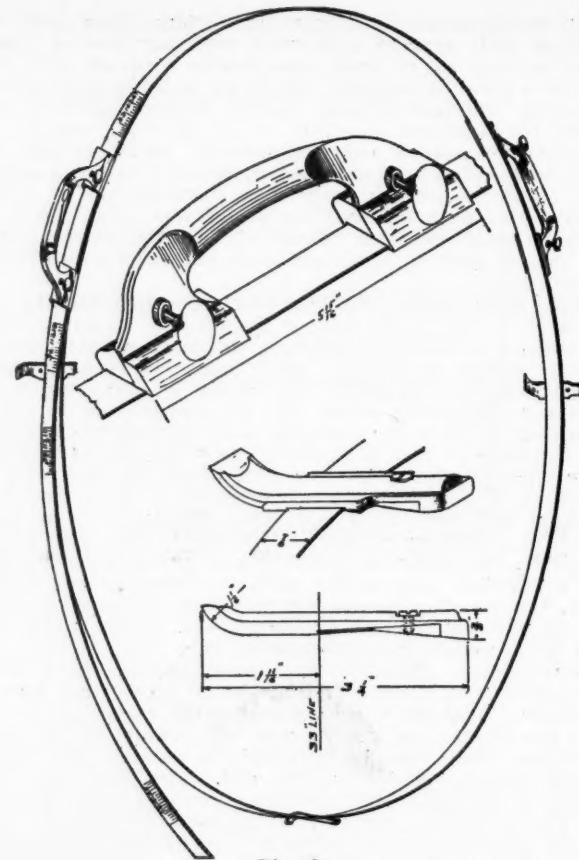


Fig. 2e.—Proposed New Bracket.

adoption of the suggestions made, as we feel that it is unnecessary to have as a standard of the Association a special wheel weighing 675 pounds for exclusive use under 60,000-pound refrigerator cars when the 675-pound 80,000-pound capacity wheel, by a slight change in the core, can be used. The Manufacturers' Association also ask a modification of the present test requirements, which the committee can not see their way clear to recommend.

The report is signed by:—Wm. Garstang (C. C. C. & St. L.), chairman; A. E. Manchester (C. M. & St. P.), O. C. Cromwell (B. & O.), W. C. A. Henry (Penna. Lines), R. W. Burnett (C. P. R.), A. Kearney (N. & W.) and R. L. Ettenger (So. Ry.).

C. E. Fuller (U. P.): I move that the report be received and the recommendations referred to letter ballot.

A. W. Gibbs (P. R. R.): Will the committee advise us why it declines to take any action in these recommendations for limiting the variation in diameter? I have had opportunity for a good many years of studying the contours of wheels as received on the road, showing wear from original contour and subsequent loss of metal in turning, say two or three times the amount of metal worn off. The critical point about the steel tired wheel has always been the wear of flanges, and we all know that in a majority of cases the wheel will wear on the flange, because all the wear comes at one point,—surely a very important subject. There should be a limit. There is no special difficulty in fixing a limit. It is not like a shrinkage limit. I do not see why this committee could not handle the thing and make definite recommendations that the variations shall not be more than so many tape sizes. I don't know whether it is in order, but I do feel that the committee has missed a very great opportunity.

The President: Perhaps some of the members of the committee can enlighten us on that point.

O. C. Cromwell (B. & O.): That matter came to the committee rather late in the season. They felt that the subject was one of so great importance, and the art and the use of the steel wheel so young at this stage, that they were not prepared without some little further time to make the investigations to give recommendations to the association.

The President: I think perhaps this point will be taken care of by the executive committee in the appointment of committees, either covering it by referring it back to this committee or by appointing a special committee, as suggested. We will vote on Mr. Fuller's motion, to the effect that the

report be received and the recommendations referred to later ballot. The motion was carried.

The President: The next report on our programme is that of the committee on Safety Appliances, Mr. Seley.

#### SAFETY APPLIANCES.

The committee regrets having no report for this year, account of pending legislation in the matter of safety appliances. The status of the matter is as follows: During the present session House Bill 5702, passed last year in the house, was taken up, and, after a number of amendments, was passed by both houses and signed by the President, thereby becoming a portion of the Interstate Commerce Law.

Section 2 of the law brings more of the details of cars under scrutiny than was called for in the old acts, namely, sill steps, hand brakes, ladders, running boards and roof handholds. A proviso is also added, covering the case of loading of long commodities requiring more than one car, and it is also understood that hand brakes are not required on logging cars and other vehicles exempted by the primary acts.

Section 3 authorizes the Interstate Commerce Commission to designate the number, dimensions, location and manner of



C. A. Seley.

*Chairman, Committee on Safety Appliances.*

application of the appliances covered by these acts after notice and hearing. Inasmuch as the hearing has not been held, the committee has no definite information as to whether the M. C. B. standards will be acceptable to the Interstate Commerce Commission or not, and until such hearings definitely decide on this point, the committee has felt that any efforts on their part might be wasted labor.

Section 4 provides for movement of bad-order cars for repairs as has been a practical necessity in the past, although such movements would be illegal were the laws strictly construed. The new arrangement gives welcome relief in this respect by permitting the car to be hauled to the nearest available repair shop without liability, except in case of danger to employees during such movement, which is properly provided for.

It is quite possible that special instructions will be issued by the executive committee or by this committee under instructions of the executive committee after the Interstate Commerce Commission hearings have been held and the safety appliances defined.

The report is signed by:—C. A. Seley (C. R. I. & P.), Chairman; A. LaMar (Penn. Lines), T. H. Curtis (L. & N.), C. B. Young (C. B. & Q.), H. Bartlett (B. & M.), and T. M. Ramsdell (C. & O.).

The report of the committee was adopted, and the executive committee was directed to send a statement to all members fully explaining the position taken by the Interstate Commerce Commission on the matter of standards.

A motion that the association assemble Friday morning at 9:30 and hold a continuous session until adjournment was carried.

#### FREIGHT CAR TRUCKS.

The subjects which the committee have had under consideration are as follows:

(a) To investigate and submit recommendations as to what changes in limits of axles are necessary to make them suitable for cars of 65,000 and 90,000 pounds capacity.

(b) To reconcile the discrepancies existing between the measurement of the wheel seat of axle "B," on Sheet M. C. B. 7, and the condemning limits shown in Rule 23 of the Rules of Interchange.

(c) To consider whether any revision of the present specifications for steel axles is necessary.

(d) To consider whether any revision of the drop test for iron axles is necessary.

(a) No intermediate sizes of axles differing from the "A," "B," "C" and "D" standards of the M. C. B. Association should be recommended. These standards have been so universally adopted in the States and Canada that axles designed for the small difference in capacity suggested would only lead to confusion.

(b) This is a matter that involves discrepancies between the first and second tables under Rule 23, the first table having been inherited from the old rules in existence before the axles were redesigned. The second table, in which the diam-



A. Stewart.

*Chairman, Committee on Freight Car Trucks.*

ters are given in connection with maximum weights, was prepared following the method for calculating diameters of axles recommended by a committee in 1896. This was done with the idea that the practice of marking maximum weights would replace the marking by capacity, and is considered necessary for certain classes of cars, such as tank cars, etc. If the diameters given in the first table, which refer to capacity of the car, were made to correspond to those in the second table, it would result in a large number of the older cars being refused at interchange points. For this reason, it is the opinion of the committee that Rule 23 should remain as at present.

(c) Since the original specifications for steel axles were compiled, considerable data have been accumulated, not only from the service of the axles, which, as far as we can ascertain, have been exceedingly satisfactory, but by the steelmakers, who are offering data of various kinds, which indicates that a change in the composition of the steel will possibly be advisable to still further improve the axle. This refers particularly to the introduction of a higher percentage of silicon, which a few years ago was seriously objected to on account of manufacturing difficulties. However, in recent revolution tests, it appears that the addition of silicon has doubled and in some cases quadrupled the life of the specimen. This work is being continued, and probably in another year will be completed; but at present the committee is of the opinion that it would be unwise to make any change in the axle specifications.

(d) It seems the original committee which drew up the existing specifications for iron axles was quite aware of the fact that, so far as deflections under the drop tests were concerned, it was doubtful whether iron axles would meet the specifications, and it seems to have been its idea to discour-

age their manufacture. As proper wrought-iron scrap, suitable for the manufacture of axles, is becoming more and more difficult to obtain, and fewer iron axles are used each year, it is the opinion of the committee that no changes should be recommended in the present specifications.

The report is signed by:—A. Stewart (Southern), Chairman; J. J. Tatum (B. & O.), A. S. Vogt (P. P. R.), J. F. DeVoy (C. M. & St. P.) and G. A. Hancock (St. L. & S. F.).

The President: You will notice that the committee recommends no action. Consequently no further consideration of the subject is necessary.

#### SPLICING UNDERFRAMING.

The committee was continued from last year to investigate the following subjects:

- (a) Maximum amount of sill splicing allowable as referred to in Rule 65 of the Rules of Interchange;
- (b) Strength of various forms of underframing.

While only twenty roads responded to our inquiries, with scarcely any exception, the replies indicate that the committee's report of last year as to the superiority of the reinforced butt splice was favorably received. Considering the information received in the replies and that gained in last year's extensive investigation, which proved that a reinforced butt spliced sill, as per Fig. 9-B, will stand 88 per cent of the abuse that a solid sill will stand and is 375 per cent stronger than a scarfed spliced sill, as per Fig. 9-A, together with the additional information gained by personal investigation of



R. E. Smith.

Chairman, Committee on Splicing Underframes.

Individual members of the committee, as well as that gained by the committee as a whole, we feel warranted in making recommendations as follows:

#### RECOMMENDATIONS.

Maximum amount of sill splicing allowable, as referred to in Rule 65 of Rules of Interchange:

1. That M. C. B. Rule 65 be changed to read as follows:

"Draft timbers must not be spliced. Longitudinal sills may be spliced at two points. No adjacent sills, except center sills, to have entire splice immediately opposite the splice on adjacent sill; splices to be staggered so as to make joint of one splice at least 24 inches from the joint of the splice on adjacent sill, measured from a line drawn at right angles with sills. Center sills must be spliced between body bolsters and cross-tie timbers, but not within 18 inches of either. Splices on all sills other than center sills, as provided for above, can be located at any point between body bolsters or between body bolster and end sill, but not within 12 inches of body bolster."

"When splicing longitudinal sills the plan shown in Fig. 9-B is to be followed.

"Any sill spliced after September 1, 1910, that does not conform to the above, will be considered improper repairs.

"Steel sills may be spliced in the most convenient location, in accordance with Figs. A, B and C. Adjacent steel sills may be spliced. The thickness of each splice must not be less than the thickness of the web of the section spliced."

2. That all figures showing plans for splicing wood sills in M. C. B. Rules be eliminated, except Fig. 9-B.

An analysis of the proposed rule will show that few restrictions have been placed upon the practice of economy in the use of high-grade material, which is rapidly becoming more costly and difficult to obtain; we do not feel that we have recommended too wide a latitude in the number or location of the splices.

It has, of course, been impracticable for the committee to conduct practical tests to demonstrate the soundness of its recommendations, because of the large scale upon which such tests would have to be conducted; and it is questionable whether the testing to destruction of any reasonable number of cars, with sills spliced in a variety of ways and locations, would conclusively confirm or disprove any theory or afford positive data from which to prescribe correct practice. There remained, then, only judgment and experience upon which to base our recommendations, which are respectfully submitted.

#### Strength of Various Forms of Underframing.

The committee does not understand that it was expected to investigate this subject as broadly as the language might justify, and it has not attempted to do so; an investigation of such scope is beyond the means or the time of this committee; it is understood rather that it was desirable that some information be brought out that would lead to a determination as to what allowances should be made in the rules to cover settlements for the destruction, on foreign lines, of cars with partial metal underframes or subframes.

In view of the fact that we received replies from only twenty roads, only eight of which were using any form of partial metal underframe, and in view of the probability that but a small percentage of cars so equipped meet with total destruction on foreign lines and have to be settled for, it did not appear to the committee that this question justified an elaborate investigation.

It appears that there is but a small percentage of the total equipment of the country provided with partial metal underframes or subframes; that there is a clear distinction between cars with metal underframes, provision for which is distinctly made in Rule 113, and cars with partial metal underframes or subframes; in the former case the entire underframe is of steel, with superimposed or attached timbers of light section, serving merely as a means of securing the superstructure to the steel frame; in the latter case the partial metal underframe is really a subframe upon which the heavy longitudinal sills rest; or it may consist merely of two longitudinal members, placed parallel with or replacing the draft sills, and serving as a more substantial means of securing the draft rigging; in some designs the body bolsters are found riveted up with the frame; in others with the metal cross ties; in still others with both bolsters and cross ties; some are designed to dispense with the body truss rods; they are not in a strict sense car frames, but rather a form of continuous draft gear to which it has been found convenient to attach the body bolsters and cross ties. Some designs are patented, and the prices range between \$40 and \$300.

It is not clear to the committee whether this form of construction or better, perhaps, form of rebuilding is going to be extensively resorted to or not, but we are of the opinion that it is not. If it should, the question of the proper basis of settlement for cars so equipped, when destroyed on a foreign line, will become more pressing than it is to-day. The committee does not feel that it can, at this time, make a recommendation as to the amount that should be allowed for each design that has come under its notice, and it does not believe that it has seen all designs now in use; nor can it suggest an allowance that would represent a fair average for all designs. The committee is of the opinion that the allowance of \$40, provided in present Rule 113, is not excessive for any of the designs.

In this connection, the committee desires to suggest that, in the third paragraph from the bottom of page 69, "40 tons or over," be made to read "less than fifty tons capacity," in order to conform with the phraseology in the fifth paragraph from the bottom of the same page, prescribing the allowance for box-car bodies, and for the further reason that there are many flat cars with steel frames mounted on trucks of 30 tons capacity; the body, being designed to withstand butting and jerking strains, is amply strong to carry a load of 40 tons or more, yet, on account of the character of the business of the owning road, it is advisable to mount the bodies on 30-ton trucks; it does not seem to us that the capacity of the trucks should affect the settlement for the body in this character of equipment. At any rate, there should be provision in the rules for settlement for 30-ton flat cars with steel frames.

The report is signed by:—R. E. Smith (A. C. L.), chairman, W. F. Bentley (B. & O.), I. S. Downing (L. S. & M. S.), H. L. Trimyer (S. A. L.), and F. A. Torrey (C. B. & Q.).

## DISCUSSION ON SPLICING UNDERFRAMES.

Mr. Downing: The scarf splice is not a suitable splice for center sills, and the idea of the committee was to get the butt splice adopted for all sills, so that we would not be making scars on the end and butts on the center.

Mr. Hennessey: If this is to go to letter ballot, I think the section which reads that splicing, after September 1, 1910, must conform to it cannot be carried out.

Mr. Downing: That should be omitted. I move that the report be referred to the arbitration committee, to be considered next year.

The motion was carried.

## CAR FRAMING, ROOFS AND DOORS.

"The Construction of Car Roofs," "End Bracing of Box Car Superstructure" and "Bracing for Side Doors" have been referred to this committee.

In addition to the information obtained through replies received in answer to the circular of inquiry, the members spent several days in the Baltimore terminals and other yards making examinations of box cars, as found in service and located about grain elevators, and of freight loading and unloading platforms, with a view of gaining any information that might assist in arriving at proper conclusions.

## THE CONSTRUCTION OF CAR ROOFS.

No. 1. The most durable and economical roof is an outside metal roof of good quality of steel or wrought-iron sheets, with a minimum weight per square foot of 14 ounces, thoroughly and evenly galvanized with a minimum coating of



W. F. Bentley.

Chairman, Committee on Car Framing, Roofs and Doors.

zinc of  $1\frac{1}{2}$  ounces per square foot, and provided with flexible joints. Roof supported by a construction to carry at a safety factor of five, a uniformly distributed load of not less than 360 pounds per running foot of length of car.

No. 2. The carlines should be metal, so constructed in connection with purlins running lengthwise and roof boards running crosswise of car, to provide proper tie and bracing to side and end framing at roof line.

No. 3. We recommend that the above details be submitted to letter ballot, with a view of adopting as minimum requirements for Recommended Practice.

A. Our reasons are, that inside metal roofs are causing considerable trouble; after every effort to get a strong roof construction and after paying a very fair price for lumber entering into such a construction, they can not be held intact, on account of lumber splitting, shrinking, warping and decaying; also due to nails breaking, rusting or enlarging of nail holes, thereby failing to hold purlins or other parts, and permitting roof sheets or roofing boards to shift, lift off or slide out of place. With certain forms of construction the entire roof has been known to lift off, thus causing leaks; they are also liable to strike and rake passing trains; further, the metal inside sheets, which are mostly concealed, crack and rust out in time, causing leaks that can only be located with difficulty and considerable expense.

B. The double board and inside plastic, and similarly constructed roofs, have short life, due to decay and inability to hold intact.

C. We understand one railroad is applying, experimentally, a number of steel-riveted roofs made of plates about .1 of an inch in thickness; further, that there are on the market steel roofs and carlines, with the roof sheets removable and of heavy-gauge steel plates, which later construction of roof sheets provide flexibility.

## END BRACING FOR BOX CARS.

No. 1. It is recommended that the minimum end construction for the box car of wood superstructure and of American Railway Association dimensions be provided with oak center end posts, 5 by 5, and oak braces, 5 by 5, or material of equal strength, substantially secured at each end through the medium of substantial pocket castings, properly lipped, to prevent shifting by strains due to ordinary shifting of any lading from within. An end plate should be provided equal to  $4\frac{1}{4}$ -inch Y pins in thickness, the end plate as well as belt rail or rails, to be strapped or very securely tied to side plate and side belt rails. The end lining to be  $1\frac{1}{4}$  inches in thickness and to extend from about 1 inch above lower edge of end plate to within 3 inches from floor or subsill on cars so provided.

No. 2. The lining at upper edge of belt rail, or rails, to clear them by  $\frac{1}{2}$  inch, to permit grain, getting between lining and siding, to fall into car as it is unloaded; further, that at points where braces and posts meet near the bottom, openings be provided in the lining to permit grain and other similar lading, getting between lining and siding below belt rail, or rails, to fall into car as contents are unloaded.

No. 3. At the floor line where lining comes to within 3 inches of floor level or subsill on cars so provided, bevel strips measuring 3 inches on the square sides must be neatly and closely fitted and secured to floor between posts and braces to prevent grain pressure acting on inside of siding and forcing it outward; this to prevent grain leakage.

No. 4. The end construction, including floor, as well as floor at side and door posts, also floor at draft bolts, must be carefully fitted to prevent grain leakage at these points.

No. 5. Care should be exercised in new construction and repairs to keep inside surfaces as free from projections as possible, so as to meet the requirements of the American Railway Association Rules and the Interstate Commerce Commission Regulations for the transportation of explosives, inflammable articles and acids.

No. 6. In box-car construction with metal or part metal superstructure the end construction must be at least as strong as the minimum end construction of entire wood superstructure; further, the lining, flooring, bevel strips, etc., above specified, must be carefully carried out, and interior surfaces must be smooth, to prevent damaging of lading.

No. 7. We recommend that the above details be submitted to letter ballot, with a view of adopting as a minimum requirement for Recommended Practice of the M. C. B. Association.

A. Our reasons for the above are, that the minimum dimensions for material as specified, with secure end pockets, also tieing, etc., are not excessively strong, and break in case of severe rough handling.

B. We are submitting for information of those interested a drawing, which shows a method of end bracing in use on some cars, and which seems to have considerable merit and might be employed to advantage when repairing old equipment.

## BRACING FOR SIDE DOORS.

No. 1. The outside-hung, side-sliding door, per drawing No. 2, also flush side door, per drawing No. 3, are to represent the minimum requirements in the door construction and details shown. Care should be exercised in selecting proper fixture details for use as part of the complete box-car side doors.

No. 2. We recommend that the above, on bracing for side doors of box cars, including drawing herewith submitted, be submitted to letter ballot, with a view of adopting as Recommended Practice of the M. C. B. Association, and to supersede the Recommended Practice as included to date on this subject.

A. Our reasons for the above are that side doors of box-car equipment are generally found in poor shape in many respects, and we feel that we can not impress upon the members of this convention too strongly or forcibly the necessity of greater care being exercised in the design of new doors and the maintenance of existing doors and parts connected therewith. Passing trains are being scraped and other accidents are occurring by doors falling off or swinging out.

B. In the examination of many cars loaded and empty in

various yards, the committee was forcibly impressed with the fact that door tracks, door hangers, door hasps, door-hasp keepers, door hoods and door-guide brackets are not being maintained in proper repair on existing cars, and in many cases doors were found worn or broken away at corners, to the extent that when they were closed the door-guide brackets would not engage or hold doors at the bottom.

C. We further recommend that the door-hood coverings be omitted from new cars, and as much as possible in repairs to old cars, not only on account of becoming loose, but for the more important reason that they conceal and prevent proper inspection of the door tracks, door hangers and door rollers, thus preventing proper maintenance and menacing passing trains.

D. It will be noted on the drawing for the outside-hung sliding door, as submitted, that some modifications have been made since the same door was submitted for consideration at the 1909 convention, to meet criticisms made. The changes are as follows:

1. A lip has been added to the open door-stop, which is fastened to belt rail so as to better support the door from swinging out when in a full open position.

2. A note has been added to the drawing in substance as follows: "There must not be less than two bottom door-guide brackets supporting the door in any position, and not less than three bottom door-guide brackets supporting the door in the closed position." This note is added to emphasize the committee's location of bottom door-guide brackets, and we are satisfied, if closely followed, will overcome most of the trouble now experienced with outside doors swinging out.

3. A change has been made in the door handle, for the reason that men operating doors equipped with handles similar to the one on 1909 committee's drawing complained that door handles cut into gloves and hands.

4. Closed door wooden stop and stop brackets have been moved back a sufficient amount to give the door opening the full clearance provided for in the frame.

E. In considering the matter of flush car doors, the one that seems to be in most general use and which seems to give the most satisfaction is the Wagner car door substantially as shown in the M. C. B. 1896 Proceedings on page 286. Some changes have been made by tipping the upper door operating rod slides over the top rail and increasing the rabbet at sides of door from  $\frac{1}{8}$  to  $1\frac{1}{2}$  inches.

F. The men at freight houses who operate these doors claim they open more easily than outside-hung doors, because the first movement of the car door is away from the load and car, while outside-hung sliding doors are frequently retarded in sliding by bulged sides, etc.

G. We know of no patents on the Wagner door and details as shown on drawing submitted.

H. We are also submitting, for information of those interested, prints showing general arrangements of "The Horn flush car door," which several members of the committee had an opportunity to see operated on a car, but as patents are applied for on this device, prints are submitted without comment.

The report is signed by:—W. F. Bentley (B. & O.) chairman; J. A. McRae (Mich. Cen.), R. S. Miller (N. Y. C. & St. L.), C. F. Thiele (Penna. Lines), and G. W. Lillie (St. L. & S. F.).

#### DISCUSSION ON CAR FRAMING, ROOFS AND DOORS.

H. L. Trimyer (S. A. L.): The report states that purlines should run lengthwise of the car and the sheathing boards crosswise. We have done this, and with the outside metal roofs that are now being used we are firmly of the opinion that longitudinal sheathing of the car is a better way of strengthening the car and the sheathing, and that the running of the boards crosswise under the metal roof is not satisfactory.

We are a little behind the times in the matter of end braces. We have been applying wooden posts for several years, reinforced by I beams, angle bars and Z bars, and with other reinforcement, and in the south this reinforcement has not proven satisfactory in handling dressed lumber and we have practically gone to the steel framing. Our experience is that one and one-quarter in. end lining is ample to protect any lading from breaking through the end of the car, will take care of any shock that will come at that point, and will tear the corner of the car loose before permitting any damage to be done. The  $1\frac{1}{4}$ -in. lining would be an unnecessary expense, and the corners of the cars as designed, are not of sufficient strength to require  $1\frac{1}{4}$ -in. end lining.

Our traffic in the south is principally perishable freight and lumber, and lading of that character. We have been working on our ends for a good many years, and they are

one of the greatest expenses we have to-day, especially on the old cars, but we believe firmly that a  $1\frac{1}{4}$ -in. end lining is ample.

C. A. Soley (C. R. I. & P.): I agree with the previous speaker as to the advisability of using longitudinal roof boards, particularly with steel upper-framed cars, and I would not like to see as Recommended Practice, the necessity for cross roof boards and the use of purlines. I believe the end linings should be  $1\frac{1}{4}$  in.

J. J. Hennessey (C. M. & St. P.): I have had some experience with longitudinal boards on roofs. Thirty-five years ago I think possibly there were 40 per cent of the cars that had the old circular roof, and the boards were placed lengthwise of the car. These roofs were not in service more than three or four years when the torsion of the car practically tore them all loose. We have used metal outside roofs, commencing in 1892, and our practice has been similar to what is recommended in the report, the boards running crosswise of the car. You strengthen the roof in the cheapest way by gaining in your purlines  $\frac{1}{4}$  in. or  $\frac{3}{8}$  in. over each carline.

T. H. Curtis (L. & N.): We have all had a great deal of trouble with the outside door getting loose; in switching and shunting the door gets away from the side of the car. The trouble lies chiefly in the fact that we do not fasten the door. The cut shows the door hasp to be  $\frac{1}{4}$  in. thick, but it does not give any width. The malleable iron people generally sell these by the piece and make them as light as possible. The drawings do not show any method of securing the door to the closed door stop, except that there are two holes. The door hasp has two bolts, and that is a move in the right direction; but these bolts are 3-in. centers. It is necessary to widen the clearance, especially with the wide doors used on automobile cars, so as to have more of a door. I have known of new cars only two or three weeks old which have had this hasp taken right out of the door, and we should show some Recommended Practice for a minimum of these fixtures, especially showing how to hold these large and very heavy doors. I am satisfied that this present method is not adequate.

W. K. Carr (N. & W.): The door stop is one of the weakest things in the outside door. It is shown as  $2 \times 3\frac{3}{4}$  in. Sometime ago in going through our yards I noticed many of the door stops were cracked; if you use a Z bar and do away with the door stop, it would protect the door from breaking. We have a great deal of damage to lading due to the rain beating in. When the hasp is brought over the staple you have a space and only 1 in. of rabbet for the door to lap over. By using a Z bar instead, you would thus accomplish two things.

C. A. Soley: I believe that sooner or later a great many of the roads now using steel under-frames will appreciate the value of using steel for the upper part or frame as well. The committee has taken a step in that direction in recommending steel columns. The state of the art and the equipment of the country is such that it would be unwise at this time to submit the matter of roof construction and car lines to letter ballot, and I move, therefore, that that portion of the report be not submitted to letter ballot, including all the recommendations for letter ballot under "The construction of car roofs."

The motion was carried.

The President: There are two other subjects to be considered under "End bracing for box cars" and "Bracing for side doors."

Mr. Trimyer: I move that the recommendations of the committee under "End bracing for box cars" be not referred to letter ballot.

The motion was carried.

The President: That leaves for consideration the question of bracing for side doors. What will you do with the recommendations of the committee?

R. L. Kleine (Pennsylvania): I move the recommendations of the committee relating to bracing for side doors be referred to letter ballot. This question has been up for the last two years. In the present recommended practice we have an obsolete door. The committee has done excellent work in securing decided improvement in side door construction.

The motion was carried.

#### TANK CARS.

In the report to the last convention, attention was directed to tank cars constructed without side sills on which no means are provided for jacking to facilitate handling in derailment and repairs. In order to determine the necessity for these jacking castings, tests were made with a loaded tank

car, limit weight 132,000 pounds, fitted with continuous center sills, but no side sills, and not equipped with jacking castings; also with a loaded tank car, limit weight 132,000 pounds, constructed with reinforced shell, having no center sills or side sills, and not equipped with jacking castings; which involved the following detail operations:

**LOADED TANK CAR, LIMIT WEIGHT 132,000 POUNDS, CONSTRUCTED WITH CENTER SILLS AND HAVING NO SIDE SILLS OR JACKING CASTINGS.**

*Inside pair of wheels removed and replaced:*

1. Block wheels in truck at opposite end of car from which inside pair of wheels are to be removed.
2. Block between side bearings on opposite end from which wheels are to be removed.
3. Block between tank and top of center sill construction, to prevent deflection of sills.
4. Place two 35-ton jacks immediately back of coupler and raise tank body 13 in., which was minimum height to clear inside pair of wheels for removal.
5. With two light-capacity jacks, jack truck frame from which wheels are to be removed sufficiently to support load with blocks under the arch bar at column bolts.
6. Remove and replace inside pair of wheels.

Total time elapsed, 35 minutes for 5 men.

**NOTE.**—When the two 35-ton jacks placed back of coupler were supporting the weight at this end of car, with blocking in between top of center sills and underside of tank, the center sills deflected  $\frac{3}{4}$  in. After the jacks were removed and the weight was placed upon the trucks the center sills showed a permanent set of 3-16 in.

*Outside pair of wheels removed and replaced (the same blocking on other truck, as well as blocking between center construction and tank, in place):*

Place two 35-ton jacks under center construction just back of coupler, to support the weight, then jack under arch bars with two light-capacity jacks to raise truck sides slightly and block under arch bars to steady load and support weight. Remove the two 35-ton jacks under center construction so that the wheels can be rolled out. Time, 6½ minutes for 5 men. Return operation: 18 minutes for 5 men.

*Truck, removed and replaced (the same blocking on other truck, as well as blocking between center construction and tank, in place):*

Jack car under center construction, just back of coupler, to permit removal of truck, then jack and block for safety back of truck to be removed (blocking on hand). Continue jacking until side bearings of body clear wheels. Raise blocking back of truck and wedge tightly. Remove jacks back of coupler and run truck out. Time, 32 minutes for 2 men.

Return operation: Replace trucks and make brake connections. Total time, 57 minutes for 2 men.

**LOADED TANK CAR, LIMIT WEIGHT 132,000 POUNDS, CONSTRUCTED WITH REINFORCED SHELL, HAVING NO CENTER OR SIDE SILLS, AND NOT EQUIPPED WITH JACKING CASTINGS.**

*Truck, removed and replaced:*

Block wheels and side bearings on other truck. Remove air pipe and piston and disconnect brakes. Place two 35-ton jacks back of coupler. Block up under side bearings after raising tank 8 in., then place 9 by 10 in. timber and saddle back of truck and set one 30-ton jack under center of same, to support weight while resetting 35-ton jacks at both ends of timber, placed back of truck, then raise on all three jacks at same time until draft arrangement on end of car is sufficiently clear of truck to permit removal. Time removing truck, 36 minutes for 4 men.

Return operation: Replace truck. Remove the two 35-ton jacks from the 8 by 10 in. timber back of trucks and place them back of coupler, in order to lower tank on the trucks. Total time with all connections made, 49 minutes for 4 men.

*Inside pair of wheels, removed and replaced (permanent planking between rails, and opposite truck and side bearings blocked):*

Place two 35-ton jacks back of coupler, then place two 15-ton jacks at sides of truck to raise weight of truck and release wheels. Remove wheels in 9 minutes. Replace wheels in 10 minutes. Total time removing and replacing inside wheels, 19 minutes for 2 men.

*Outside pair of wheels, removed and replaced (permanent planking between rails, and opposite truck and side bearings blocked):*

Place two 35-ton jacks back of coupler, jack weight of car from trucks, and then set two jacks under truck frame and jack weight of truck. Place blocking under center of arch bars. Remove the two 35-ton jacks from under the coupler and remove outside pair of wheels. Time consumed, 15 min-

utes. Replace wheels and reset two 35-ton jacks back of coupler, raise weight of car, then remove side jacks and blocking from under arch bar and remove jacks from back of coupler. Time consumed, 10 minutes. Total time removing and replacing wheels, 25 minutes for two men.

In addition to these tests made by the committee as a whole, the individual members of the committee looked into the matter at their home shops, and, while they found comparatively few cases where it was necessary to jack loaded cars not equipped with side sills for the removal of wheels and still a lesser number for the removal of trucks, the consensus of opinion is that jacking castings are desirable to promote safety in doing the work, aside from the question of additional labor involved when these cars are not equipped with suitable jacking castings. The most suitable location would seem to be at the body bolster.

Inasmuch as there are freight cars of other types in service which should also be provided with suitable jacking castings, on account of the present difficulty experienced in jacking up cars not equipped with side sills of sufficient section to withstand the pressure of the head of the jack, this question become one of general importance, and the committee would, therefore, recommend that a special committee be appointed to go into this question generally, so that any Recommended Practice adopted will cover the whole situation.

With this question eliminated, the work of the committee is practically concluded, and, as the provisions of the Tank Car Requirements have now been Recommended Practice for a number of years, your committee would recommend that the present Recommended Practice be advanced to Standard and the committee discharged.

Inasmuch as the various railroads are now printing their own tank car circulars, we think it would be advisable for the M. C. B. Association to have them printed in pamphlet form, so that they can be purchased by the various members at a nominal sum, the same as the Interchange Rules and the Loading Rules.

The report is signed by:—A. W. Gibbs (P. R. R.), chairman; C. M. Bloxham (Union Tank Line), S. K. Dickerson (L. S. & M. S.), and J. W. Fogg (Chicago Ter. Trans.).

**DISCUSSION ON TANK CARS.**

**C. M. Bloxham (Union T. L.):** It is rather a delicate matter for me as a member of the committee to criticise the report, but I take exception to the recommendation of the committee as a whole in respect to that feature of it referring to the discharge of the committee. I am sure that Mr. Gibbs, the chairman of the committee, will not misunderstand me when I say that I consider it very important that the committee, at least the chairman of it, should continue the work in respect to the design of the jacking casting for the particular type of tank car referred to. It presents an exceedingly difficult problem to solve, and inasmuch as the present committee has given considerable study and thought to the matter, and has conducted some experimental work in relation to it, and has realized the difficulties and some of the dangers involved in the matter, it should continue the experimental work.

**A. W. Gibbs (Pennsylvania):** Having been the chairman of this committee for about seven years, I may say the conditions now and the conditions at the time the committee was appointed are very different. At that time the tank car equipment was probably the worst equipment running. The construction was obsolete and some bad wrecks and fires showed the necessity for radical change. In the seven years this committee has been working the owners have generally met the new requirements and at the present time tank car equipment will compare favorably with other equipment. For one I feel that the time has come when we can treat tank cars as we treat other cars. We had to put on a number of requirements, you will remember, about wheels, because of the peculiar loading of tank cars. That point has been taken up and put into the regular working of the cars, under Rule 23, and I think the time has come when the tank car is no longer an unusual or peculiar car, so that its consideration requires a special committee.

**R. L. Kleine:** I move that the present recommended practice for tank cars be submitted to letter ballot for adoption as standard.

The motion was carried.

**TRAIN PIPE AND CONNECTIONS FOR STEAM HEAT.\***

The committee, continued from last year, was instructed to report on universal interchangeable steam hose coupling dimensions for both train pipe and connections. The committee decided to make tests to get a comparison between

the large hose and couplings and medium hose and couplings. Tests were conducted at Collinwood, in March, 1910, on a train of thirteen cars, equipped with 2-inch pipe in the usual manner: Inlet controlling valves were all closed; steam was turned on at head end of train and time noted. When water appeared at rear end the time was noted; when steam appeared time was noted. When steam appeared the valve on rear end was closed. Time to get 10, 20, 30, 40, 50, 60 pounds



I. S. Downing.

Chairman, Committee on Train Pipe and Connections for Steam Heat.

such that their passenger equipment seldom interchanges with the roads using the medium coupler; therefore, no difficulty whatever, so far as we can see, will ensue if the roads now using the large coupler continue to use it and the roads now using the medium coupler continue to use it. It in rear car was noted.

From the data obtained, we find, of course, that the large coupling will allow steam to pass more freely than the medium, but the difference is not so great as to be of much consequence. We believe that either large or medium is entirely satisfactory. When the Master Car Builders adopted the large coupling and hose as recommended practice, in 1903, many prominent railroads immediately accepted the recommendation and put the large equipment on all of their passenger cars and passenger locomotives. On the other hand, there are prominent railroads using the medium equipment, which is doing good work. The investment in large and medium couplers is of considerable magnitude; fortunately, the location of the roads using the large coupler is

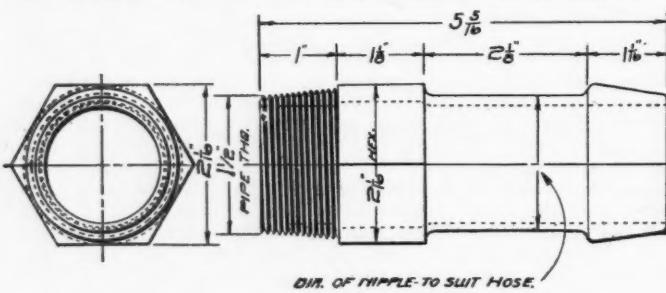


Fig. 7.

would certainly be asking a great deal of either the users of the large or medium couplers to change, and for this reason your committee would not recommend either for standard of this Association.

In regard to end valves: We had the different makes mounted on a rack. It would not be possible to adopt any one of these valves as standard without causing a great expense to the railroads using the other valves, and for this reason we would not recommend any end valve as standard at this time.

#### RECOMMENDATIONS.

1. Two-inch train line.
2. Location of steam train-line signal and brake pipe as shown on M. C. B. Sheet Q, with the following note: "The

dimensions underscored should be maintained, but departures from other dimensions are allowable to suit conditions. Opening shown on steam line is the opening of train end valve."

3. End train-pipe valves.

4. Hose to be 31 inches from face of coupler gasket to end of nipple.

5. Nipple on coupler to be 20 degrees minimum and 25 degrees maximum angle with horizontal.

6. Nipple as shown on Fig. 7.

The committee is indebted to the Lake Shore & Michigan Southern Railway Company for furnishing equipment, men and other necessities to make this test, and to the following steam-heat companies for supplying end valves, hose and couplings: Chicago Car Heating Company, Consolidated Car Heating Company, Gold Car Heating Company, Safety Car Heating & Lighting Company, Ward Equipment Company.

The report is signed by:—I. S. Downing (L. S. & M. S.), chairman, H. E. Passmore (T. & O. C.), T. H. Russum (B. & O.), and J. J. Ewing (C. & O.).

#### DISCUSSION ON TRAIN PIPE AND CONNECTIONS FOR STEAM HEAT.

The President: The committee has made these recommendations, but I do not see that they have stated just what they want done with them.

Mr. Downing: They are recommended for standards. Hose No. 4 and hose No. 2 are now recommended practice. I believe hose No. 1 is also recommended practice. The committee was appointed to go into the present practices to see whether they should be advanced to standards or not. We recommend that they be advanced to standards.

C. E. Fuller (U. P.): It seems to me that the work of the committee is not complete. I see no reason why we should not have standard nipples for steam heat hose the same as we have for air-brake and train signals. I move that the committee be continued with a view to recommending next year dimensions for standard steam hose; also to reconsider all its recommendations and prepare a specification for steam hose.

J. J. Hennessey (C. M. & St. P.): We should have but one standard. Some of the roads went to a great deal of expense changing their steam lines to 2 in. It is quite necessary; on a very long train the smaller hose does not meet the requirements on the rear cars.

Mr. Fuller: My motion was not with the intention of forcing the roads into a lot of changes, but I do feel that this association should have a standard steam heat hose, standard sizes and standard connections for those who want to use them.

G. W. Wildin: I think the committee should get busy and define the openings of steam passages, so that when the automatic coupling does come they will have to meet the requirements of that opening. We will not, then, have the same variations in the automatic couplers as we have now in the present style of coupler.

The motion made by Mr. Fuller was carried.

#### BUREAU OF INFORMATION

The Official Railway Guide Bureau of Information is performing a valuable service, not only in furnishing complete information as to all trains leaving Atlantic City by whatever road, but also in relieving members and guests from the trouble of getting tickets and making Pullman reservations. The Bureau has prepared a complete time table of all trains to New York and Philadelphia by both the Pennsylvania and the Philadelphia & Reading, and is also distributing a blank providing for the following entries: Name, booth, time of leaving, by what road and destination. The order, to be left at Booth 34 near the main entrance, will be filled by the purchase of tickets and the reservation of Pullman space, which will be marked on the blank and signed by the agent at the ticket office. The ticket, etc., will then be left at the booth designated.

The United States Express Company is showing its usual promptness in connection with matter intended for members and guests of the convention. Mr. Ewan, who supervised matters in 1909, is in charge of the company's affairs here this year.

## Conventionalities.

George W. Smith, superintendent of machinery of the Missouri Pacific, cannot attend this year's conventions on account of a press of important matters.

Arthur Masters, sales agent of the U. S. Metal & Manufacturing Company, arrived Tuesday. He is one of the concern's "Barol" Leech experts.

R. T. Bryden, of the Wadsworth-Howland Company, is always here; not with "Carburet" and "Durelastic," however, but with his usual "glad hand" and bully stories.

"Happy Frank" Bingham, of the Union Fibre Company, owns a gold mine in British Columbia and works for his living in Chicago.

J. G. Barry, manager of the railway department, and H. L. Monroe, manager of the railway department in the Chicago office of the General Electric Company, arrived Saturday and are stopping at The Shelburne.

Mrs. J. F. Dunn, Salt Lake City, wife of the superintendent of motive power and machinery of the Southern Pacific, is attending the conventions after an absence of five years. Mrs. Dunn is a most welcome addition to the ranks of the ladies.

Walter B. Leach, general manager and treasurer of the Hunt-Spiller Manufacturing Corporation, accompanied by Mrs. Leach, is again in attendance at the conventions. This year Mr. Leach is spending less time than usual at the exhibit, as he has more assistants. This speaks well for the company's business and its activities in the railway field.

Mr. and Mrs. H. W. Leeds arrived Sunday evening on the Pennsylvania Limited from Chicago, their home. Mr. Leeds is manager of the railway sales department of the Union Fibre Company. He was formerly a railway official; this is his first convention as a supply man. It is also Mrs. Leeds' first convention, and her addition to the ranks of the convention ladies will be welcome. Mr. and Mrs. Leeds are stopping at Haddon Hall.

Jim Gardner and Mrs. Gardner arrived yesterday from Chicago with Mr. and Mrs. P. R. Kimberly as guests. They are stopping at The Shelburne. Jim has shipped his automobile to New York, and with his guests will make a trip from there to the White Mountains and then back to Chicago. The party will stop at Shelburn Falls, Vt., to visit the grave of Jim's long-time friend, Julian Yale.

Remember that the struggle for the possession of the forts and the winning of the prizes in the Military Euchre will take place in the ballroom on the pier Friday evening, and that there will be room for every one who knows the difference between the ace and the joker.

Robert P. Lamont, first vice-president of the American Steel Foundries, arrived Wednesday and is stopping at the Marlborough-Blenheim. Mr. Lamont will remain several days before returning to his home in Chicago. President William V. Kelley, of the American Steel Foundries, is expected here the latter part of the week.

Frederick W. Sivyer, president of the Northwestern Malleable Iron Company, and one of Milwaukee's most prominent and respected citizens, died last Saturday at his home in Milwaukee. He was a lover and benefactor of school boys and at his own expense founded the Milwaukee School of Manual Training for Boys.

C. E. Barry and F. H. Gale were the early arrivals from the general office of the General Electric Company.

M. E. Davis, eastern representative of the Western Wheeled Scraper Company, is here and is stopping at the Marlborough-Blenheim and is accompanied by his wife and secretary.

The Adams & Westlake Company representatives, including G. L. Walters, Chicago, and E. L. Langworthy, Philadelphia, are quartered at the Traymore. The old-time attendants at the conventions will miss the presence of the genial Fred B. Jones, secretary and later on one of the directors of the Adams & Westlake Company, who has retired from the cares of business life.

H. J. Small, general superintendent of motive power of the Southern Pacific, will not be able to attend the conventions this year, much to the regret of his many friends. Mr. and Mrs. Small have only recently returned from a three months' trip to the Orient, having visited China, Japan, Korea and the Philippines. Mrs. Small has greatly improved in health during the past year. Many of the younger set of those who attend the conventions will miss the presence this year of Miss Barbara Small, who formerly was a regular attendant with her father and mother.

Major H. C. Howell, manager of the railway department of the Fidelity & Casualty Company, New York, is here on his annual pilgrimage to meet his old acquaintances at the conventions and to make a few new ones. The Major takes an optimistic view of the railway and financial situation, provided the people most interested will continue their legitimate work of sawing wood and meanwhile refrain from too great lingual activity.

Answering many inquiries concerning the absence of H. S. Hayward, superintendent of motive power of the Pennsylvania Railroad and first vice-president of the New York Railroad Club, we regret to state that Mr. Hayward has been obliged, on account of ill-health, to take a leave of absence and will be at the hot springs of Virginia for a month or more. His address is Healing Springs Hotel, Bath County, Va.

Among the old-time faces we note David Holtz, who was for more than thirty years master of machinery of the Western Maryland. Mr. Holtz doesn't look one day older than he did ten years ago. And he's just as active. His hobby is work. They tried to retire him, but he wouldn't down. He's keeping body and brain active by selling wood and metal working machinery. With him it's like running a farm, though. He considers himself lucky when he breaks even.

C. A. Soley has relieved his system of a conundrum: "What is worse than a worm in an apple?" Remembering the old one about the white sheep and the black sheep and their eating capacity, you naturally answer, "Two worms." Soley says that that is a fairly good answer; but the correct answer is, "Half a worm." Why? Because you have the other half in your mouth—yah!

Perhaps we can stop the flood of inquiries by explaining that Clarence H. Howard is not here because he can't be in two places at the same time. Mr. Howard sailed for Europe a few days ago, and while abroad will attend the International Railway Congress (we won't add "at Berne," because the printer will run out of the letters used in those words if we repeat them much more). He has turned over his office keys to Vice-President Harry M. Pfleger, while his brother, George E., will represent him here at Atlantic City. Mr. Howard has his son, Blake Clinton Howard, with him, and they are staying at the Runnymede. Young Howard is a student in the engineering department of Washington University, St. Louis.

Herbert W. Green, of the firm of Burton W. Mudge & Company, has been in ambush on a side track for the past few days, lying in wait for the stork from which he has wrested a nine-pound boy. He has now boarded a special train which has been waiting for him for four days with steam up. He has passed through Pittsburgh, and is expected at Atlantic City in time to save the M. C. B. Convention. P. S.—He left the boy at home.

The origin of the present systems of cash and parcel carrying in stores, and which from stores has extended to the pneumatic mail service in cities and many forms of package delivery for longer or shorter distance, may be traced to the device installed in his store in Lowell, Mass., by W. S. Lamson, now president and general manager of the American Mason Safety Tread Company. The first arrangement was improvised from a wooden rain spout set on an incline and designed to carry a wooden ball holding cash from the clerk to the cashier's desk, and another spout to return the change from the cashier to the clerk. The utility was so marked that necessity for improvement was manifest; and what has followed in the way of invention is now to be found wherever light and quick transportation service is pressing. Mr. Lamson is visiting in Atlantic City, and is much interested in the exhibits on the pier.

#### PULLMAN TRANSPORTATION.

Free Pullman transportation can be had upon request to E. A. Benson, mechanical engineer, of the Pullman Company, at Galen Hall. Only the members of the association who are entitled to such transportation can procure it.

#### CLUB SECRETARIES' DINNER.

The annual dinner of the Railway Club Secretaries' Association will be held on Saturday evening at 7 o'clock in the garden of the Windsor Hotel, weather permitting. If not weather is inclement the dinner will take place in the cafe of the same hotel.

#### MASTER CAR BUILDERS' BALL

The Master Car Builders' ball last evening was made an eminently successful event, due largely to a novel feature introduced by the committee in charge by means of which the usual difficulty in finding partners was wholly obviated. Around the hall were arranged 12 banners each bearing the name of one of the larger cities, and on the "Order of Dances" was provided opposite each dance a space, not only for the name of the partner for that dance, but also for the entry of the name of the city designating the banner under which the partner was to be found, for instance, opposite Dance No. 8 was entered on both the lady's and gentleman's card the name "Chicago," indicating that for that dance the partners would meet under the banner bearing the name of that city.

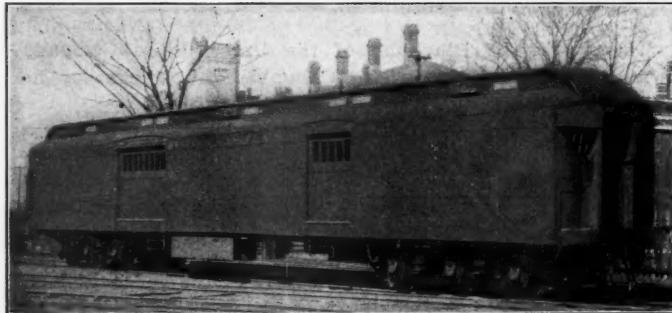
The grand march was a very simple one and thus some of the awkward situations that have sometimes been experienced were avoided. It was led by F. H. Clark and Mrs. Clark, personally conducted by J. Will Johnson, chairman of the entertainment committee. The leaders were followed by other officers of the association and their ladies and next in line followed former officers.

The favors for the ladies were directory canes decorated with ribbons, one being handed to each lady before the close of the march. Music was furnished by the Old Guard orchestra. The committee in charge of the ball consisted of J. L. Connors, chairman; W. J. Walsh, E. S. Toothe, J. C. Younglove, E. P. Smith, Frank Martin, George Moses, C. M. Garrett, H. E. Oesterreich, Bartram Berry, C. W. Wardell and Frank Farmer, Jr.

#### ROCK ISLAND 66-FT. STEEL BAGGAGE CARS.

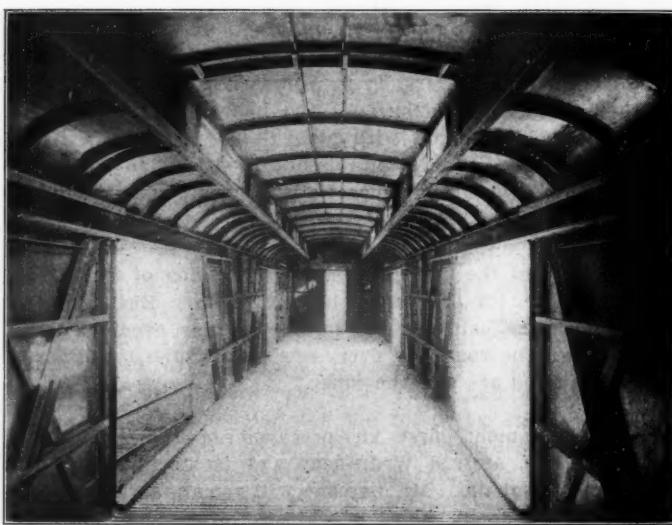
The Rock Island has recently received from the American Car & Foundry Company, New York, thirty 66-ft. steel baggage cars, and the Frisco line seven of the same kind, making a total of thirty-seven cars, similar to the one here illustrated. The cars are equipped with six-wheel trucks with cast steel frames, the two trucks weighing 42,900 lbs., and the car body 83,400 lbs., making a total of 136,300 lbs.

The principal members of the steel underframe are the two center sills, which are 10-in. I-beams, 35 lbs. per ft., and the side sills, 6 x 6 x  $\frac{3}{8}$  angles. There are no cover plates



Baggage Car; Chicago, Rock Island & Pacific.

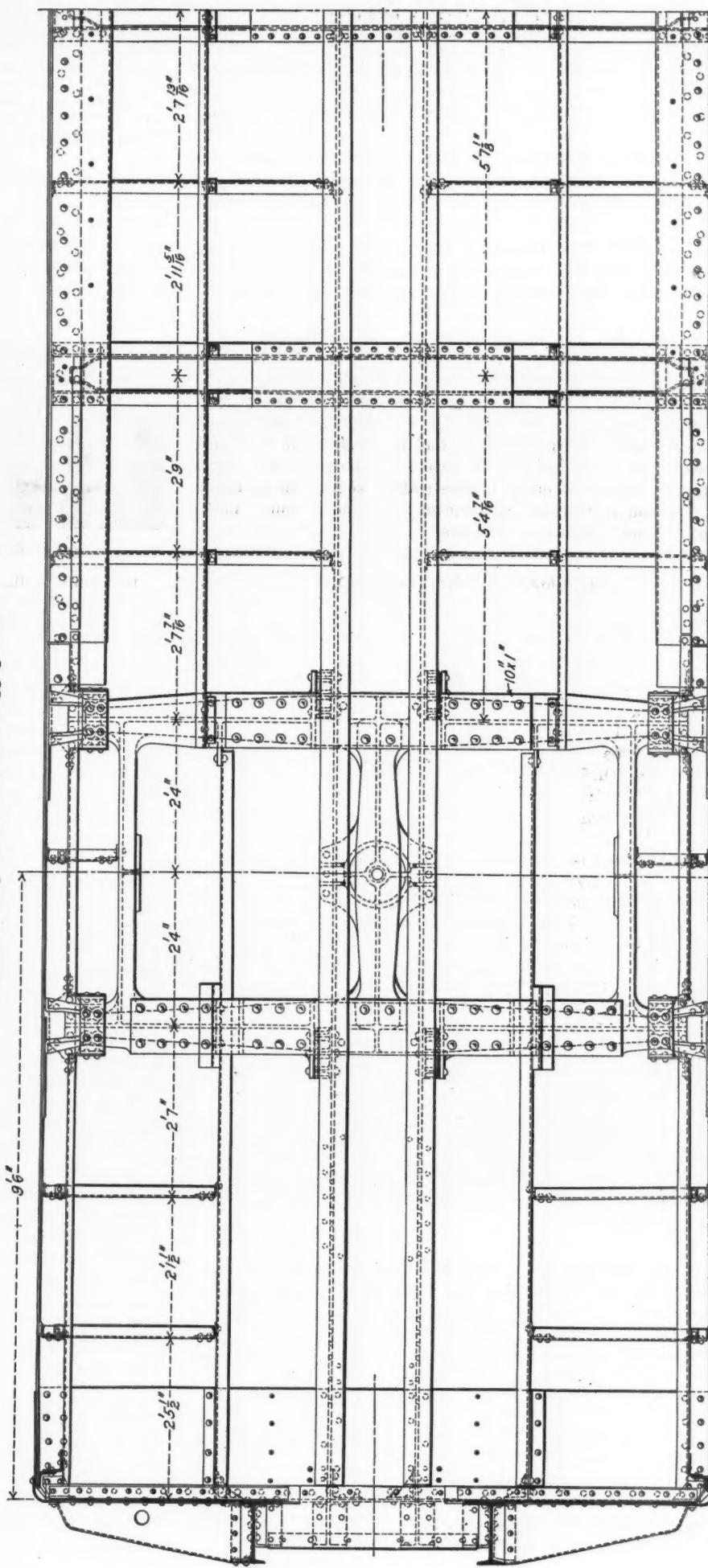
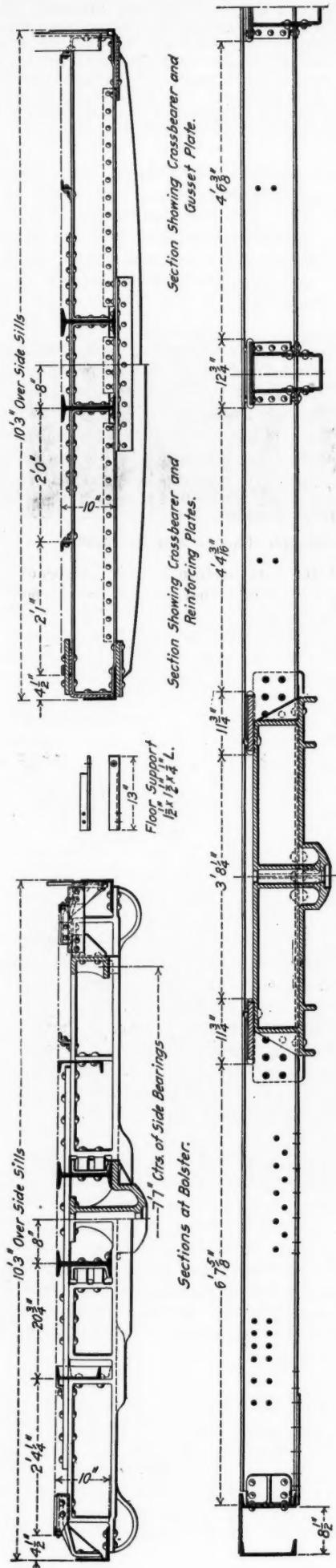
on the center sills, but there is horizontal diagonal bracing through the floor made of 2 x  $\frac{1}{2}$ -in. bars. The double body bolsters, made by the Commonwealth Steel Company, are arranged so that the center sills are continuous. These sills are intended to carry the buffing stresses, and the principal portion of the load is carried by the trussed side frame. To transmit the load to the side sills there are, in addition to the body bolster, five special pressed steel U-shaped cross bearers which are 6 $\frac{1}{2}$  in. wide, 7 $\frac{1}{2}$  in. deep and  $\frac{1}{4}$  in. thick, and directly above them, between the sills, are diaphragms made of special pressed channels  $\frac{1}{4}$  in. thick and the full depth of the sills. This side framing is made of metal posts and braces, something like the construction used in wooden box cars. The principal diagonals are 5-in. 9-lb. channels and the posts 3 x 3 x  $\frac{3}{8}$  angles, with a belt rail made of 4-in. channels, 5 $\frac{1}{4}$  lbs. per ft. The side plate is 5 x 3 x 16 angles,



Interior of Rock Island Baggage Car.

and the side covering  $\frac{1}{8}$ -in. steel sheets. The arrangement of the side trussing is shown on interior view, which does not include the corrugated steel lining.

The floor consists of Keystone flooring covered with acandolite cement, and on top of this 1 $\frac{1}{4}$ -in. wood flooring. The cars are lighted by the axle system supplied by the Safety Car Heating & Lighting Company, New York, and vapor steam heat is used with Spear stove auxiliary.



## Plan of Underframing; Rock Island Baggage Car.

## The Exhibit.

L. W. Shugg, who is now advance courier in installation of exhibits for the General Electric Company, Schenectady, N. Y., will remain in charge of the exhibit during the convention.

The Buffalo Brake Beam Company's exhibit of truss and solid brake beams is receiving much attention. Its new type of truss beam is shown for the first time at this convention.

The Landis Tool Company, Waynesboro, Pa., has a quantity of worn piston rods which it uses in its demonstration. These show what actually can be done with these parts.

G. C. Bohn, vice-president of the White Enamel Refrigerator Company, St. Paul, Minn., reports a large business for the new Bohn system of car refrigeration. Recent orders include many from leading railways and the Pullman Company.

The booth of the Gold Car Heating & Lighting Company, New York, is attracting unusual attention this year. This company's excelsior vapor valve, which can be applied to any system of car heating, converting it into vapor or combined pressure and vapor, is a marked advance in the art of car heating.

J. H. Bracken, assistant general manager of the Union Fibre Company; F. J. Bingham and S. E. McPartlin, general sales agents of the same company, and H. W. Leeds, manager of railway sales, arrived Sunday to attend the conventions and take charge of the company's attractive display on the steel pier.

H. W. Leeds, railroad sales manager of the Union Fibre Company, Winona, Minn., has of late given so much time and study to the designing and construction of the Union Fibre Company car showing Linofelt insulation (to be seen on the P. & R. side tracks at Atlantic City) that the car has been not inappropriately called the Leeds private car.

If any person has an order in his pocket for one or more of the several Commonwealth Steel Company products, he will find them lined up in surrender formation at booth 315. "Them" are George E. Howard, vice-president and general sales manager; Boone V. H. Johnson, vice-president and sales agent; Frank S. Barks, mechanical expert; and Burton W. Mudge, president of Burton W. Mudge & Company, of Chicago.

On the numerous "ungetatable" connections on locomotives and cars, the Jefferson union is claimed to be by far the easiest to install. There is no gasket required, and the brass ring is held firmly in place in a channel cut to fit exactly. The brass to iron seat makes it easy to disconnect them, also. The device is made by the Jefferson Union Company, Lexington, Mass.

In the Jefferson brass to iron seated union the effects of expansion and contraction are reduced to a minimum, as the quantity of brass is so small. It is simply a ring, cut from seamless brass tubing and sunk in a channel. The absence of internal strains makes it better able to resist the external strains of rough usage on locomotives. It is made by the Jefferson Union Company, Lexington, Mass.

Anderson Polk (alias W. A. Polk), of the enrollment committee, who was for 14 years associated with the Patterson-Sargent Company, became associated several months ago with Lowe Brothers Company, Dayton, Ohio, as its Eastern representative. An error was made in listing Mr. Polk as still associated with the Patterson-Sargent Company.

The Crawford Locomotive & Car Company, Streator, Ill., manufacture and rebuild freight cars of all designs according to specifications of the purchaser or from its own designs. This company has special shops for rebuilding and reinforcing freight cars with steel underframes. The plant consists of thirty-two acres, and is equipped with modern machinery and tools. It is located on the Atchison, Topeka & Santa Fe, Wabash, Chicago & Alton and New York Central Railways.

The National Tube Company, Pittsburgh, Pa., manufacturers of the famous Kewanee union, also make the Kewanee flange union. In addition to the advantage of requiring no gasket, the construction is such that the flange is loose on the collar, and the bolts match the holes in any position of the flange. A tight joint is assured even when the pipe alignment is imperfect.

The American Car & Foundry Company, New York, installed Mason safety tread on 60 new passenger cars for the New York Central lines. The 50 Hudson & Manhattan cars were floored with car Karbolith and Karborundum Karbolith surfacing. On the 110 cars for the Interborough Rapid Transit it used Karborundum Karbolith surfacing material. This last material is proving decidedly satisfactory, as it not only wears exceedingly well but is non-slippery and tends to prevent accidents. These specialties are made by the American Mason Safety Tread Company, Boston, Mass.

A very interesting exhibit of a roller side bearing is shown this year by The T. H. Symington Company, Baltimore, Md. The single roller of white iron is carried in the body member, and is positively centered by two coil springs in the ends of the retaining casting, the springs exerting pressure on the roller through the medium of small malleable iron followers. The followers are so designed as to push the roller down on its trunnions when it is not in contact with the truck member, which avoids any possibility of its rattling in its retaining chamber when not under load. The truck member of this side bearing consists only of a hardened steel wear plate securely fastened to the truck bolster.

The Galena-Signal Oil Company, Franklin, Pa., hasn't what one would ordinarily term "an exhibit;" but it is here in force, as in previous years. Its reception booth, which is tastily furnished, it will be open every day, Sunday excepted. The company is represented by the following officers, salesmen and mechanical experts: S. A. Megeath, first vice-president and general manager; C. C. Steinbrenner, vice-president; E. V. Sedgwick, manager mechanical expert department; Harry Hillyer, Fred A. Guild, Barton H. Grundy, George L. Morton, John W. Bunn, J. P. Ferguson, A. I. Gifford, E. W. Grieves, William Holmes, E. G. Johnson, W. E. Maher, L. H. Palmer, P. H. Stack, W. J. Vance and W. J. Walsh.

There is no particular reason under the New Jersey sun (which never seems to shine) why railway men should not know all about the "Boss" nut, manufactured by the B. M. Osbun Company, Chicago, and exhibited on the pier by Vice-President D. O. Ward. Mr. Ward is an old-time nut lock man. He has designed and marketed some of the leading nut locks used by the principal railways of the country. His latest nut, the "Boss," is his best—so he says. The Osbun Company exhibit may be found in Machinery Hall, quite near the Boardwalk end.

Mica is a mineral which has a peculiar interest on account of its unusual formation, a great number of exceedingly thin layers, and also for the reason that deposits of it are found in comparatively few parts of the world. An interesting collection of samples of various kinds of mica ranging from the soft dark mica of South Dakota and the green mica of Argentina to the clear India mica is shown at the exhibit.

of the Storrs Mica Company, Owego, N. Y., space 19 in the main building. While a great variety of mica is shown, the only form of the mineral used by that company in the manufacture of its chimneys is the highest quality of clear India mica, which when split to the proper thickness, is as clear as glass and sufficiently soft and pliable to be well suited for the manufacture of lamp chimneys.

#### NO MORE HOSE FAILURES.

What a relief it would be to feel sure that hose failures in the air brake equipment or signal line service were impossible. The Sprague Electric Company, New York, claims to have brought about this condition with its flexible steel armored hose, which is on exhibition at booth 322.

#### MISCELLANEOUS CASTINGS.

The improvement in the quality of steel castings, toward the elimination of blow holes and to meet the requirements of present day railway practice is no small accomplishment.

The American Steel Foundries, Chicago, are showing a collection of castings used in railway work, which indicate the progress and advancement being made in this direction.

The castings exhibited are not intended to show any new or novel ideas as to construction or design, but are ordinary railway castings selected at random from regular work going through the foundry with the idea of illustrating results obtained by this company in its efforts to so improve the quality of work of this character that the designers of equipment can confidently specify steel castings for all purposes where



Pouring Steel Driving Wheel Centers at Indiana Harbor, Ind.

There is said to be no danger of the hose bursting, as the armor takes all the strain and will stand a test pressure of 1,500 lbs. per sq. in. The standard fittings are secured by clamps which engage the shoulders on the nipple and coupler to prevent blow-outs.

This company also claims another strong feature, brought out in service. When the rubber has deteriorated to such an extent that it pulls, the air pressure forces the rubber hose together against the armor, thus closing the rupture to such an extent that the air brake will not be set and the train can reach its destination before it is necessary to replace the hose. Sprague flexible steel armored hose has the maximum degree of safety.

great strength is required, and also benefit by the lighter construction to reduce the dead weight to the minimum.

An examination of the castings shown would seem to indicate that the large amount of time and money being expended by the American Steel Foundries in improving the quality of castings is accomplishing results.

To enable it to derive the full benefits of improved practice and methods which have been developed, this company has recently put into service at Indiana Harbor, Ind., a new foundry, which is being operated as an independent unit. Here small castings will be kept separate from large pieces, which makes possible the use of methods required to produce castings of this character and of a satisfactory and uniform quality.

One of the features of this foundry is an electric furnace, in which the melting is done by the use of electricity, which eliminates from the metal all the impurities introduced by the fuel used in melting. In a furnace of this design, it is also possible to get a very much higher temperature than has been attained with the furnaces and fuel in ordinary use, also producing a highly liquid metal which greatly facilitates moulding intricate designs.

Steel freight and passenger equipment created a demand for high-grade steel castings. Among the castings exhibited

To come down to brass tacks, one male Kewanee union ell or tee replaces four ordinary fittings; three possible leaks avoided! These fittings possess what are claimed as the Kewanee union advantages, as follows:

Brass to iron thread connection at the ring. Brass to iron will not rust together, and the joints can be disconnected and reconnected without injury.

Brass to iron ball joint seat. A joint of two different metals is better than a joint of the same metal, and a brass to iron joint makes a tight seal without the use of a gasket.



Finishing Room, Indiana Plant, American Steel Foundries.

for use under freight equipment are striking plates, pedestals, spring seats, brake lever lugs, fulcrums, center plates, draft castings, columns, stake pockets and numerous castings for use in locomotive and steel passenger car work.

To properly care for its increasing business in miscellaneous castings the American Steel Foundries has recently found it necessary to open a sales office at Pittsburgh, Pa., with A. R. Brunker in charge.

#### KEWANEE UNION ELLS AND TEES.

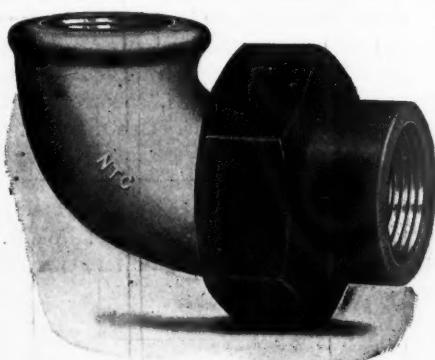
Under the conditions of modern power equipment there is an increasing desire to reduce to a minimum the number of joints in piping. Every joint generally indicates the additional possibility of a leak, and leaks mean—well, it is superfluous to explain the consequences of leaks at these conventions.

Every individual fitting is tested with 100 lbs. air pressure under water; the slightest leak shows in the form of a bubble and every fitting must pass the test with a perfect



Kewanee Union Tee.

record or it is scrapped. This test assures sound fittings. The National Tube Company, Pittsburgh, Pa., manufacturer



Kewanee Union Ell.

of this type of fitting, has recently issued a booklet entitled "The Whole Kewanee Family," a copy of which may be obtained at the booth.

#### BARTLEY NUT AND BOLT FASTENER.

The American Nut & Bolt Fastener Company, Pittsburgh, Pa., exhibit in booth No. 320 a new nut lock intended especially for track bolts, frogs and crossings, recently patented by Milton Bartley, president of the company. This new lock is made of spring steel plate, with a slight oval rib rolled on one side. It has the advantage of having a flat bearing for the nut and only requires a wrench to apply or remove it and when applied it is a positive lock. When the nut is applied the oval rib is just on the edge of the nut and any effort to become loose is resisted by the oval rib. Call at booth 320 and examine this lock.

#### CORRUGATED STEEL END FOR BOX CARS.

A sample corrugated steel end for box cars was exhibited on the pier last year by the W. T. Van Dorn Company, Chicago. This year the company shows a further development of the improvement as actually applied to the ends of a Southern Pacific box car and it can be seen on the track exhibit. The plain corrugated end,  $\frac{1}{4}$  in. thick, weighs



Corrugated Steel End for Box Cars.

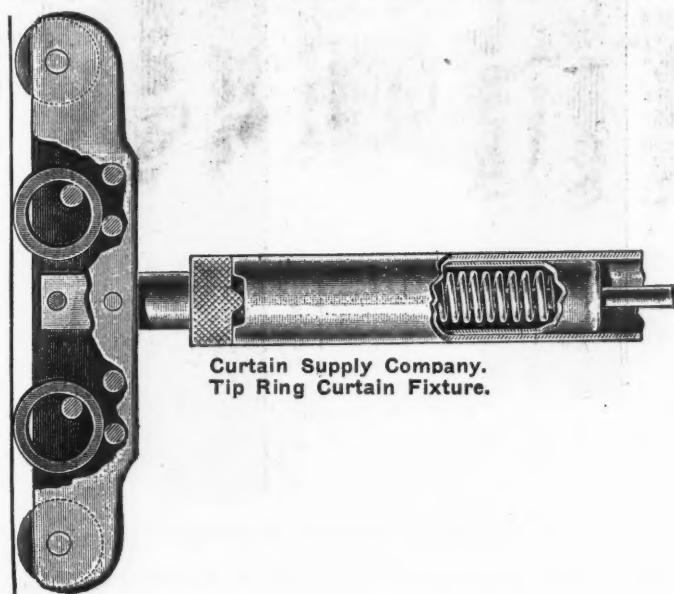
850 lbs. The steel end as now exhibited is provided with top and bottom doors for loading long materials such as rails and lumber and these doors have substantial hinges and fastenings. The improved car end strengthens the box car at its weakest point and should prevent much of the damage due to the shifting of the load. It dispenses with posts and braces and numerous bolts, trusses, plates, etc.,

which are usually employed to strengthen the ordinary car end. The two corrugated steel ends are tied together by substantial rods so that they act together in resisting the blow due to shifting loads. The corrugated steel end is smoothly flanged and is a fine example of hydraulic press work.

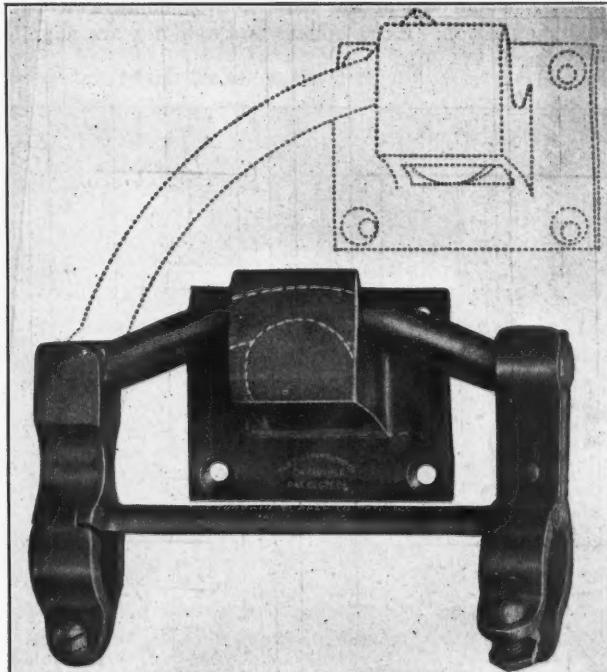
#### THE CURTAIN SUPPLY COMPANY'S EXHIBIT.

The exhibit of the Curtis Supply Company, Chicago, this year is very effective, and its booth is conspicuous for its attractive appearance. A full line of curtains and curtain fixtures is being exhibited, comprising the widely used ring fixtures. The construction of these fixtures has been somewhat improved during the last year, although the principle of operation is the same.

The company is also showing a full line of curtain materials and is calling special attention to its automatic releasable handles and roller bearing hooks which are used in connection with vestibule curtains. The automatic releasable handles

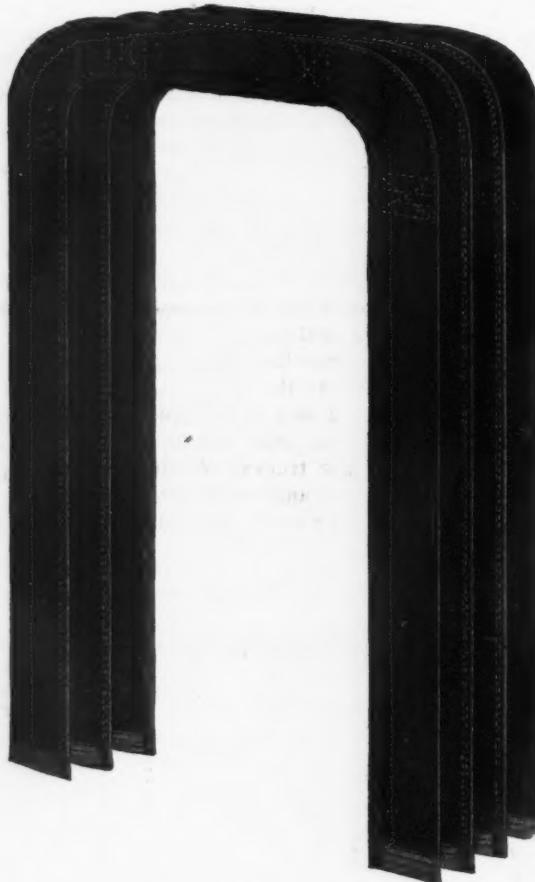


Curtain Supply Company.  
Tip Ring Curtain Fixture.



Automatic Releasable Handle for Vestibule Curtains.  
Curtain Supply Company.

afford a means of releasing the vestibule curtains when cars are uncoupled, without taking the handle of the vestibule curtain off its hook. The presence of the automatic releasable handle saves the tearing and injuring of the vestibule curtain, the pivoted handle yielding under the pull of the curtain when the cars separate. The No. 6 roller bearing



Curtain Supply Company Diaphragm.

hook is made for saving the great wear on the ordinary hook, which makes its life very short. The roller revolves with the continual rise and fall of the handle, thus doing away with the rubbing friction. Extra rollers and spindles are supplied at low figures.

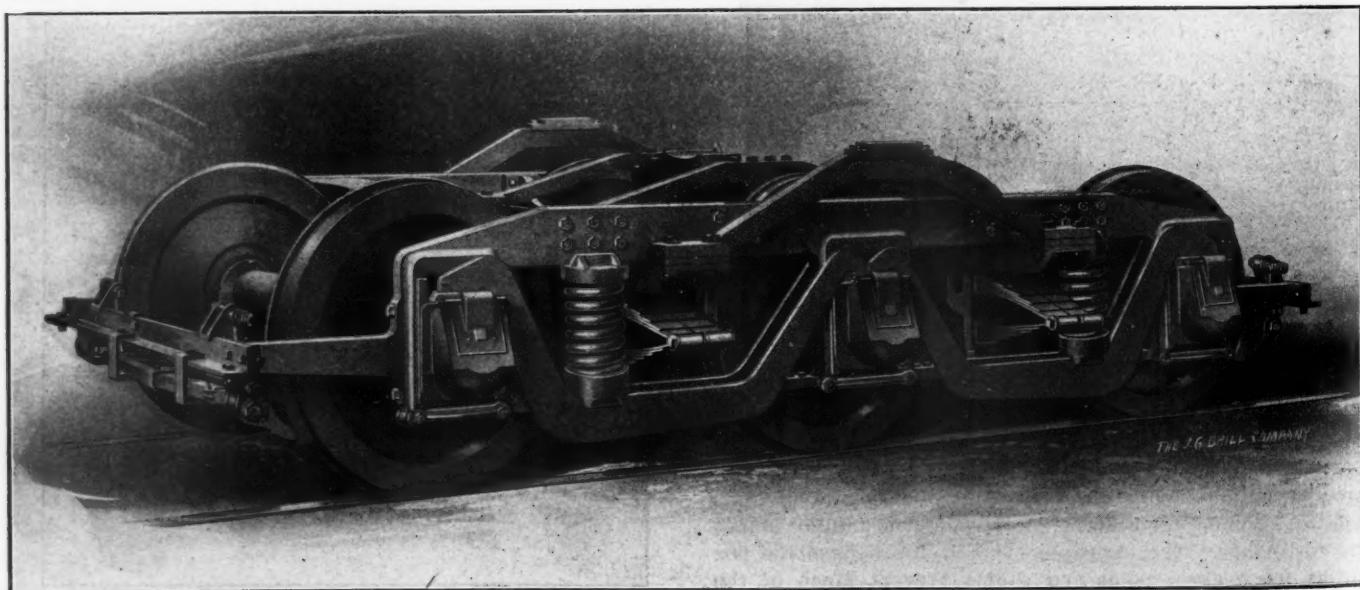
In addition to its regular line, the Curtain Supply Company this year is putting out a full line of diaphragms, comprising the following four brands: CSCO, Rex, Victor and Victor Rubbertexed. These vary in specification and also in price. The full line enables the prospective purchaser to select his diaphragm on specifications and prices satisfactory to himself. In conjunction with the diaphragms, canopies or hoods are exhibited made of various materials. One material which has proven especially popular for this purpose is asbestos. This is treated to become waterproof and, with its own essential feature of being fireproof, affords complete protection to the diaphragm. The company is represented by: W. H. Forsyth, general manager; R. F. Hayes, eastern manager, and S. W. Midgley, western representative.

#### THE BRILL M. C. B. PASSENGER TRUCKS.

About fifteen years ago the J. G. Brill Company, of Philadelphia, began to build trucks for electric railways which had the wheel piece and pedestals of each side frame embodied in a solid steel forging. This construction so quickly evidenced certain advantages that the process of making solid forged side frames has been steadily developed and special machinery and processes evolved which have enabled the company to secure approximately 60 per cent of the electric railway truck business. The types of trucks which have been manufactured heretofore have for the most part been exclusively electric railway types.

This year for the first time the company is exhibiting a four-wheel M. C. B. type truck and has designed a six-wheel M. C. B. truck, which is shown in the accompanying illustration. Both these trucks have the characteristic Brill solid forged construction. In each the wheel piece is forged in one solid piece, including the pedestals. The mild steel, from which these wheel pieces are made, is shaped under hydraulic pressure of 3,000 to 4,000 tons, insuring a uniform structure throughout the metal and at the same time "working it down" to a density which, together with a very thorough annealing process, renders it proof against crystallization.

Attention is directed to the pedestal tie bars, both long and short. The long bars consist of channels double bolted to an extension or foot on each inside pedestal. The two short tie-bars to each pair of pedestals are held in place by bolts which are not in shear as the strain is entirely on



Brill Six-Wheel M. C. B. Truck With Wheel Piece and Pedestals Embodied in a Solid Forging.

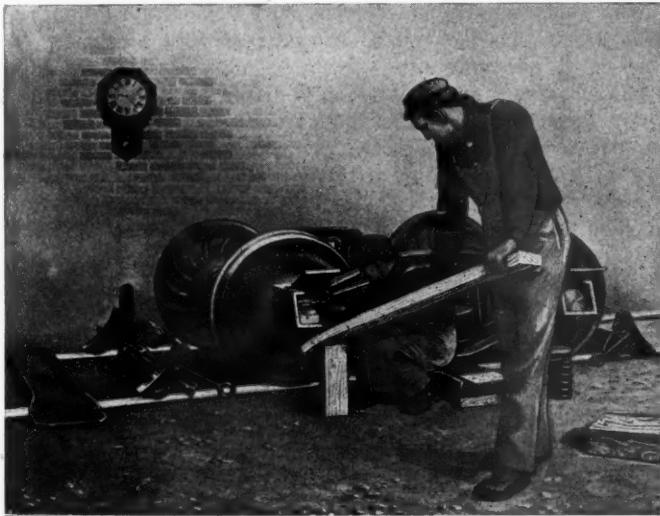
lugs cast on these tie-bars. This arrangement prevents the bolts from rusting in and facilitates the removal of the tie-bars. Pressed steel wear pieces are employed for the inner faces of the pedestals and this part of the pedestal is machined to give a true fit. The arms or extensions which connect with the end piece are brought low to give clearance and also to secure the maximum resistance to corner-wise strains.

It is claimed that this construction has decided advantages because the character of the material and its form are superior to riveted and built-up constructions with their multiplicity of parts, and to castings with their liability to hidden blow holes, porous sections and crystallization. There is little or no deterioration in a truck frame built with the wheel pieces forged in a single piece, including the pedestals, and therefore maintenance charges on the frame are practically eliminated.

#### DISMANTLING AND ASSEMBLING THE BETTENDORF TRUCK.

Any piece of machinery is only as strong as its weakest part; and, when parts are multiplied, chances are multiplied that sometime some part of that piece of machinery will fail to perform its intended function. With this fact in mind the Bettendorf Company has striven in its manufactures to reduce the number of parts wherever reducible.

In illustration, take their draft and center sills. It has been found that in wrecks as well as in the hard usage of ordinary traffic car ends, especially the draft and center sills, sustain the greatest damage. If these are weakened by dependence on extra castings and rivets for connecting the draft riggings,



Dismantling and Assembling the Bettendorf Truck.

their ability to meet shocks adequately is lessened. To overcome this difficulty, the Bettendorf Company has designed a draft and center sill end casting which has the necessary projections and openings to receive any desired draft rigging. At the same time the design permits the use of a continuous body bolster which can be removed without disturbing the center sills proper. Thus the advantage of one-piece construction is gained with the elimination of innumerable pieces, and yet there is no increase of weight.

Working on this same theory of "fewer parts less trouble," the Bettendorf Company makes a truck which, while it is the highest development of the arch bar truck, presents the important improvement of integral structure. All bolts, nuts, nut locks, and other loose parts common to other trucks, are dispensed with. Even the journal box is combined in one casting with the arch bars, columns and spring seat.

The forty-one pieces of the arch bar become one in the Bettendorf truck.

The absence of bolts and nuts on the bottom of the frame prevents the distorting of the truck and the breaking of journal boxes in cases of derailment. And when wheels must be changed, the method necessitated by the new truck gives greater facility than was possible with the regular arch bar truck with its bent and rusty bolts and nuts.

In casting journal boxes integral with the frame, perfect alignment is maintained when once established. This is accomplished by the Bettendorf method of squaring and testing. Flange, collar and end brass wear are thus all reduced to the minimum. Side frames are made of basic open hearth cast steel and are tested as severely as are the journal boxes. Each frame must undergo in the test a load five times as great as it carries in service. The result of this careful manufacture is that the journal box is very rarely broken, so rarely that the Bettendorf Company feels that it can well afford to replace the entire side frame at the cost of an ordinary malleable iron journal box.

The one-piece truck has the advantage of flexibility, enabling it to adjust itself to the inequalities of the track and thus reducing derailment and flange wear to the minimum. It also shows a saving in dead weight of 1000 pounds per car over M. C. B. arch bar trucks. Yet it is so designed that it can be made to interchange with any M. C. B. arch bar type of truck, and can be readily adapted to the use of either top or bottom rollers.

But the most interesting characteristics of the Bettendorf truck are shown in the ease and rapidity of its dismantling and assembling. For this work only the ordinary tools of the repair yard are needed:

2 wood levers or crow bars.

2 car jacks.

2 chains. For these the brake chains may be used.

2 blocks to go under side frames.

1 block to go under bolster.

No wrenches are required, because there are no bolts or nuts on the Bettendorf truck.

Dismantling of freight trucks will proceed as follows:

Jack up the car in the ordinary manner and remove truck from under car. Place blocks underneath center of side frames so as to maintain them in normal position when released.

Remove the brake rigging, detaching the fulcrum from the bolster. Remove the brake beams by swinging the hangers which are attached to the beams far enough toward the center of the beams to allow them to slip over the hanger pins which are cast on the frames.

Place grab chains around each end of the bolster near the side bearings, and by means of the levers raise it into position against the top arch bar.

While one man holds the bolster in position against the top arch bar by means of a lever, let the other remove the springs, which can be easily slipped out when the bolster is raised up.

Still holding the bolster in position against the top arch bar, remove the spring plank.

Lower bolster to the bottom of the openings in the side frames, blocking it at the center so that no weight rests upon the side frames.

With a block and lever raise each journal box and remove the wedges and brasses.

Slide the side frame outwards until the journal boxes are free from the collar of axle, and lay the frame down, lower part on blocks.

The truck is now completely dismantled and any new parts that may be required can easily be substituted, and the truck is ready for assembling.

This entire operation is said to take but nine minutes, while changing the wheels on the M. C. B. arch bar truck

frequently takes from half an hour to an hour and a half, according to the condition of bolts and nuts.

Assembling the truck is a mere reversal of the dismantling process, and, it is claimed, can be accomplished in six minutes, with two minutes extra for replacing the truck under

ing bays have through tracks, with a capacity for repairing seventy-five cars under roof, and in the entire plant there are four and one-half miles of railway track, giving a large space for repair work outside.

The power house is a substantial brick building with a



Near View of Part of the Crawford Locomotive and Car Plant.

the car—seventeen minutes for the whole operation with the one-piece truck.

The Thomases who doubt the above representations of the wonderful facility and rapidity with which the Bettendorf trucks can be dismantled and assembled will have a chance to witness the actual performance the third week in June. For at the convention the whole operation of dismantling and assembling these one-piece trucks will be carried on for the benefit of the admiring public; and every doubting Thomas may time the performance by his own cherished timepiece.

#### CRAWFORD LOCOMOTIVE AND CAR WORKS.

The repair of freight cars by outside shops has developed into a large and important industry, and some of these shops have put in an equipment of machine tools suitable for furnishing complete steel underframes.

The Crawford Locomotive and Car Company plant is at Streator, Ill. This shop is on the main line of the Santa Fe, on a triangular piece of ground covering 32 acres, bounded by other railways, so that its shipping facilities are unusually good. These works were completed and placed in operation in October, 1906, under the direction of R. W. Crawford, the president, who is responsible for the design of the plant and

capacity for doubling its present equipment of boilers, engines and generators. The chimney is also intended for double capacity. This is a steel stack, partly lined, resting on an octagonal brick base. It is 150 ft. high, 8 ft. in diameter inside at the bottom and 6 ft. at the top. There are four of 1,000 h. p. In the engine room there is a 500 h. p. compound engine from the Ball Engine Company, Erie, Pa. This is connected to a Western Electric A. C. generator, 350 k. w. The air compressor is made by the Bury Compressor Company, Erie, Pa. It has compound air cylinders with a capacity of 1,000 cu. ft. per minute.

The machinery in the car shop is driven by electric motors, partly through line shafts, and quite a number of the tools are driven directly by motors. The shops can turn out twenty new wooden cars per day, or thirty-five repaired wooden cars, or twenty-five reinforced gondolas. The works are now engaged in applying steel underframes to 1,000 tank cars for the Santa Fe, and they have on hand a large number of steel underframes for gondola cars. All these steel underframes were made at these works. Mr. Crawford has plans already prepared and expects to build soon a new forge shop and a new planing mill. When the planing mill is finished the large car building can then be entirely occupied by tracks for cars under repairs.



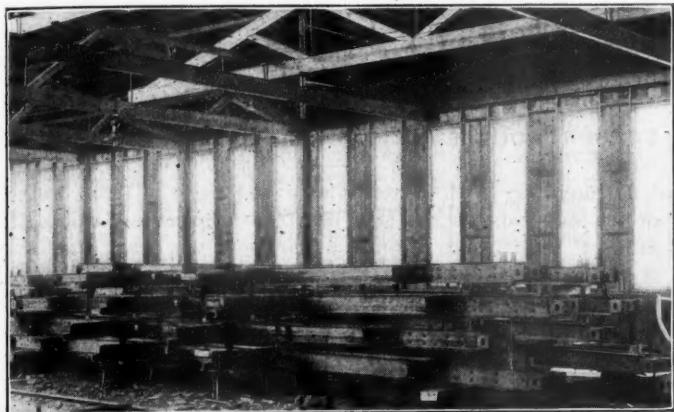
General View of the Crawford Locomotive and Car Works,

Streator, Ill.

the general direction of the repair work. The main shop building is 126 ft. x 800 ft. and is divided into four bays. The one outside at present is occupied by the wood-working Sterling water tube boilers, each 250 h. p., making a total machinery and wheel and axle machine tools. The remain-

The shops are conveniently located for workmen, as there are paved streets and electric street car lines passing the main entrance, and all men who are in charge of the work, from the president down, are practical mechanics who have had much experience in repairs and building of freight cars. The

plant is well supplied with convenient office buildings. There is one general office for the principal officers and accountants, and another for the shop foremen and their clerks. There is

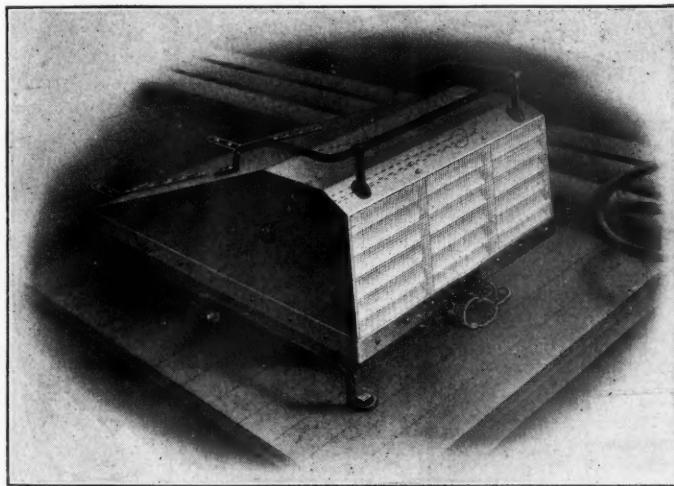


Interior of Erecting Shop, Crawford Locomotive and Car Co.

still another for the inspectors of railways having cars under repairs. This is an unusual convenience, but one which is much appreciated by the inspectors.

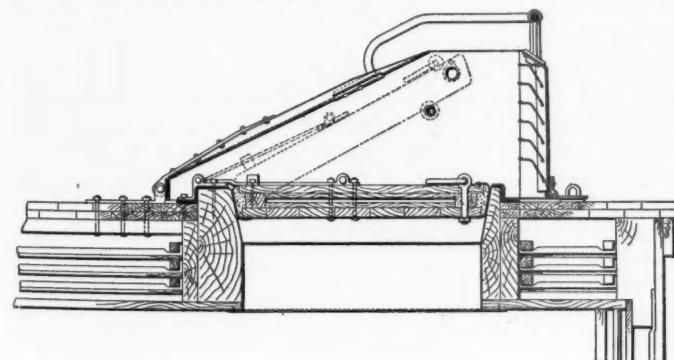
**THE WHITE ENAMEL REFRIGERATOR COMPANY  
HATCH VENTILATOR AND PLUG.**

The improved refrigerator hatch ventilator and plug made by the White Enamel Refrigerator Company, St. Paul, Minn., is shown by the attached photographic cut and drawing. The ventilator consists of a galvanized steel hood which covers



White Enamel Refrigerator Company Hatch Ventilator.

the ordinary hatch opening, and it is supplied with steel louvres with a cinder screen in front. This hood is made of No. 20 gauge galvanized steel with a  $\frac{5}{8}$ -in. grab iron on



Bohn Ventilator.

top. This galvanized iron is bound with  $\frac{1}{4} \times 2$  in. steel bands, which are riveted to the sheet; and extending from the bands to the top of the hood are two  $1 \times 1$  in. angle irons notched in front of the ventilators to receive the louvre strips. Extending through the ventilators side by side is a  $\frac{1}{2}$ -in. iron rod which holds the hinged plug in open position when car is being run under ventilation. At each side of the ventilator is a  $1\frac{1}{2}$ -in. peep hole, with a small cover intended to be used in determining whether the plug is in ventilating or refrigerating position. The hatch plug is made of Oregon fir filled in with three layers of  $1\frac{1}{2}$ -in. flax fibre refrigerator car insulation. The outside edges of the plug are covered with canvas stuffed with curled hair, forming a cushion, so that it may be forced tight into the opening. The hinges which attach the plug to the car have  $\frac{3}{4}$ -in. play so that it can be forced farther into the opening as the cushion wears down.

**DUNTLEY AIR PURIFIER.**

One of the achievements of modern times is an invention for purifying and cleansing the air in railway coaches and buildings. This process actually washes the air of dust and impurities, leaving it fresh and pure. By the use of the oxygen air purifying powder the air will not only be freed of obnoxious and poisonous gases, but pure oxygen will be liberated. It assimilates the foul gases, such as carbon monoxide, carbon dioxide and sulphureted hydrogen, washes the dust and germs from the air, thoroughly cleansing and deodorizing it.

Realizing the great importance and the extent of the undertaking to perfect such an apparatus, no expense was spared in experimental and scientific research, and as a result the oxygen air purifying powder represents one of the great discoveries of chemistry. While air purifications is the chief aim of this powder, the apparatus may be used with any liquid disinfectant, deodorizer or fumigant.



Duntley Air Purifier.

Beyond the initial cost of the apparatus, the expense of operating the Duntley air purifier is very slight compared with the old methods of disinfecting with liquid sprays, and the work is done without any effort on the part of the operator.

The purifier is made of good quality aluminum and will last for a number of years. It has an air displacement of 500 cu. ft. per minute, and as it weighs but 25 lbs., it is easily carried. It is equipped with four funnels and a Universal motor. The funnels are easily adjusted by a small thumb screw so as to direct the air current in one or four directions. The motor may be operated on either direct or alternating current, the rheostat attachment making it possible to operate at a slow or fast speed. The machine is made by the Duntley Manufacturing Company, Chicago.

**IMPROVEMENTS IN BAKER-PILLIOD VALVE GEAR  
MADE BY THE PILLIOD COMPANY.**

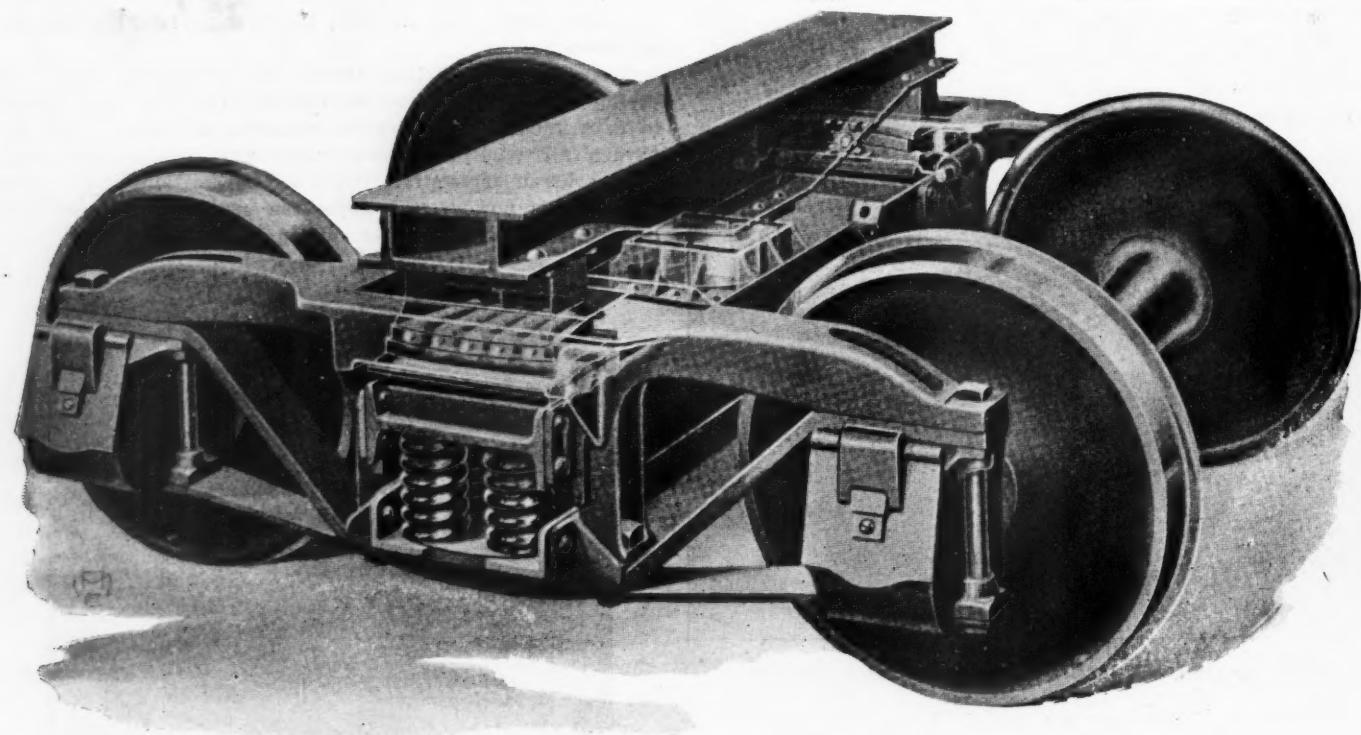
This gear has been improved by reverting to the original Baker patents and, also, by improving the mechanical construction. Two levers on each side of the locomotive have been cut out, thus eliminating two triple joints and two bell cranks. The combination lever is very much simplified, which will enable the railway to change the lap and lead if they so desire.

holes has been greatly reduced, and all are made easy of access. All pins are double supported, and every pin and nut is in plain view for inspection and repair. All pins are driven in from the inside, so that an engineer can easily drive out any pin if necessary. The frame is made in one piece instead of two. The whole gear is more compact, easier to apply and weighs less than the old gear.

**BARBER DOUBLE-ACTION ROLLER BEARING TRUCK.**

To do away with center plates and carry all the weight of the car body on the side bearings is a radical change in design; but it has several advantages and has been successfully accomplished in a truck designed by the Standard Car Truck Company, Chicago. The truck shown in the illustration has been in service under a fifty-ton steel ore car on a northwestern road for the past year and a half. There has been practically no flange wear on the wheels; the car has been watched closely, and the results reported have been satisfactory in every way.

A truck embodying the same features, but of a still better design, is on exhibition in the Standard Car Truck Company space, Booth 123. Each side bearing has ten rollers 5 in. long and 2 in. in diameter in place of five rollers 10 in. long, as shown on the engraving. These rollers carry all the weight of the car body, and are between top and



Barber Double-Action Roller Bearing Truck.

The valve bell crank motion has been reduced, at the same time making it possible to obtain more valve travel. The valve bell crank pin has been increased in size, which, together with the reduction of the motion of the pin, greatly increases the life of this joint. The reversing yoke does not throw as far for full gear as heretofore, thus improving the squareness of valve events. The reversing yoke lays forward in the forward gear instead of backward as heretofore. This makes it possible to connect the reach rod to the center of the top of the reverse yoke and not at the side as heretofore.

The change in this connection increases the leverage that the reach rod has on the yoke, and does away with the twisting movement that existed heretofore. The angularity of the eccentric rod is done away with. The number of the oil

bottom side bearing plates of cast steel. The center of the side bearing is above the center of the nest of springs, and the load is transmitted through them directly to the truck side frame and the journals. The side bearings are a sufficient distance from the center of the truck to require a considerable movement of the rollers, and they do not tend to bed in. Lateral motion is provided by the standard arrangement of Barber rollers. The truck side frame has been changed to a one-piece steel casting.

The use of the truck will make it possible to relieve the center sills of the greater part of the load, except for the buffing and pulling stresses, thus allowing the utilization of the sides of the car for carrying the greater part of the load and transmitting it directly to the journals.

## IMPROVED NATIONAL SASH LOCK.

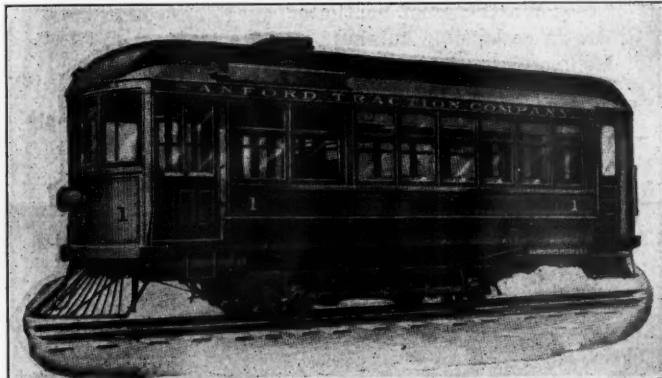
The improved National sash lock, made by the National Lock Washer Company, Newark, N. J., is made of solid bronze with locking levers made of the company's own special mixture, so hard it will not wear and almost to a steel temper, so as not to be brittle. It will lock the window at any height automatically and prevents rattling. A window cannot fall when equipped with this lock; the shaking of a car instead of releasing levers locks the window tighter. It is easily applied, strong in construction and simple in operation. It is not necessary to cut away sash or woodwork, and when used in connection with this company's face and edge springs it makes a dust and draught proof sash.

The company furnishes these sash locks in all modern statutory bronze as well as other finishes. These locks are being installed on over 500 cars.

## GASOLENE PASSENGER CAR.

The accompanying illustration shows a gasolene motor car similar to one which is in operation on a railway in Louisiana. The St. Tammany & New Orleans Railway & Ferry Company was organized to operate a railway and line of boats between Covington, Ky., and New Orleans, La., giving the people of Covington and other towns along the route a direct line into New Orleans and saving about three hours' time. The railway runs from Covington to Mandeville, where it connects with the boats. The road has three gasolene cars, two of the type shown, seating 35 people each, and one smaller car with a seating capacity of 20 passengers.

The cars were manufactured and sold by Fairbanks, Morse & Company, Chicago. The large cars, type No. 24, have a semi-convertible body, divided into two compartments. The for-



Fairbanks-Morse Gasolene Passenger Car.

ward compartment is arranged for baggage and express, has drop side seats, and can be used for a smoking compartment. The rear has reversible seats upholstered in rattan. The body of the car is hung independently of the engine, making the car ride comfortably and without vibration. The engine is four-cylinder, four-cycle, water-cooled, 60-h. p. capacity, of a very heavy type, weighing 2,000 lbs. The transmission is the through gears, giving three speeds in each direction, and is arranged so that it is impossible for the operator to throw in more than one speed at a time and thereby strip the gears. The drive is by roller chain to bolt axles. The cars are equipped with air brakes and electric lights.

Another road operating successfully the No. 24 Fairbanks-Morse type of car is the Stanley, Merrill & Phillips, running from Stanley, Wis., to Ingram. This is a standard steam road, but in order to take better care of their passenger traffic a gasolene motor car was installed, with the result that operating expenses have been greatly reduced, while passenger business has increased.

The statement below showing performance of this car dur-

ing two different months, one after being put in service and one a few months later, are especially interesting in that they show the increased business. Also, they show the actual cost of operating this class of equipment.

	September, 1909.	March, 1910.
Gross revenue .....	\$756.47	\$1,075.99
Cost of operation .....	182.83	241.84
Net revenue .....	\$575.64	\$834.15
Pass. carried .....	1,106	1,905
Miles run .....	3,234	3,300
Cost of operation per mile	.06	.064
Miles per gal. gasoline...	6.28	6.37

## OWEN-COCHRAN PRESSED STEEL JOURNAL BOX.

The Owen-Cochran journal box, now being placed on the market by the U. S. Metal & Manufacturing Company, New York, booth 337, is a pressed and forged proposition throughout, no castings being used in its construction. The top and body of the box are pressed separately and while still hot the top is slipped over the upper flanges of the body part and these edges are crimped down, making a tight joint. The dust pan is secured to the back of the box by four rivets. The wedge guide is a forged piece of  $\frac{3}{4}$ -in. iron secured to the top of box by two rivets. The guide carries the hinge butt for the lid. Standard M. C. B. lids



Owen-Cochran Pressed Steel Journal Box.

are fitted to all boxes, thus eliminating the special lid feature.

Six rivets only are used in the construction of the box and none of these rivets is subjected to strain. A box car on one of the prominent western roads has been equipped with these boxes on test since December, 1906, and they are said to be still giving excellent service.

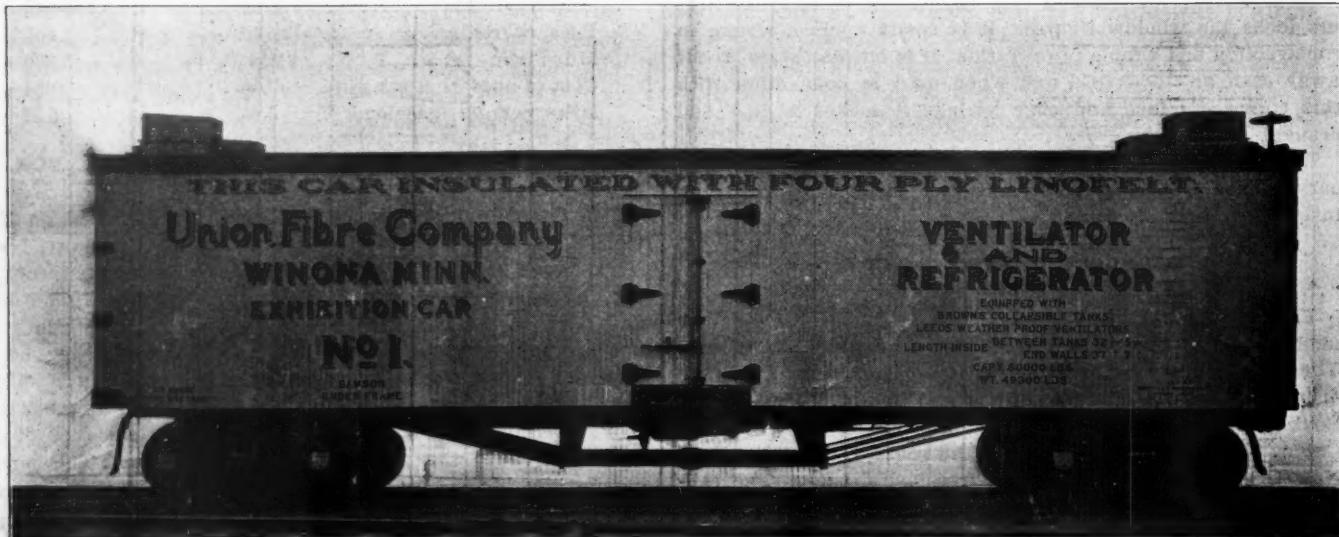
## MODEL REFRIGERATOR CAR.

The Union Fibre Company, Winona, Minn., has on the Philadelphia & Reading tracks a model refrigerator car constructed for exhibition and test purposes. This car includes recent improvements and refrigerator car construction and yet retains the simplicity so necessary in freight equipment of this type. Particular attention is directed to the four-ply linofelt insulation, which is illustrated by blue prints in the car and a series of photographs in the Union Fibre Company's booth No. 448. This car is also equipped with three novel devices which will be interesting to car builders: Brown's collapsible tank, which is easily handled by one man; Weatherproof ventilator, an essen-

tial feature with collapsible tanks of all types, and a non-splashing drip pan, which not only prevents water slopping into the car on the load but also affords a level loading floor over the drip pan when the tanks are collapsed.

Those interested in refrigerator and freight equipment should see the car. A company representative will be on hand at all times to furnish additional information.

Hewitt journal bearings  
Simplex bolsters  
Samson steel underframe  
Miner draft gear  
Janney improved couplers  
Westinghouse air brakes  
Miner door lock

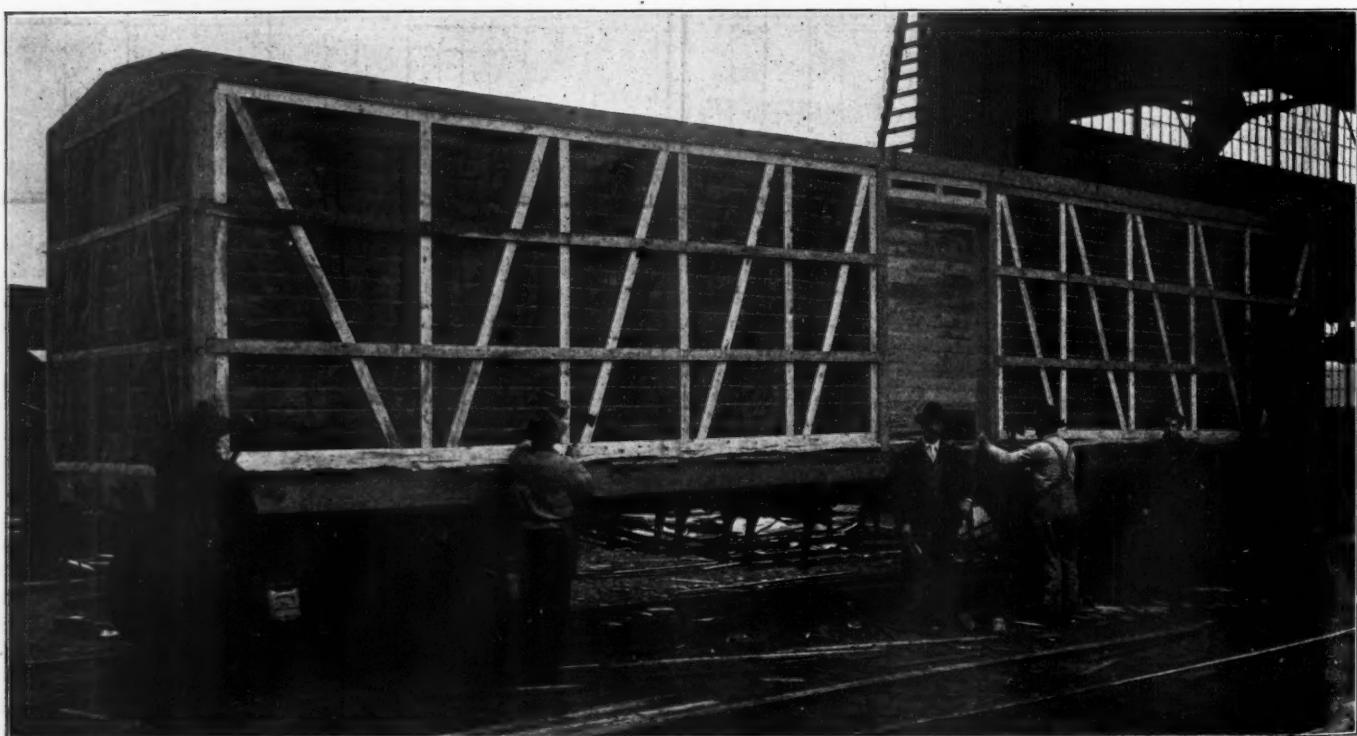


Exhibition Car, Union Fibre Company.

The general specifications of the car are as follows:

Length over end sills ..... 40 ft. 0 in.  
Width over side sills ..... 9 ft. 3 in.  
Length inside, between bulkheads ..... 32 ft. 5 in.  
Length inside, bulkheads collapsed ... 37 ft. 7 in.  
Width of car inside ..... 8 ft. 2 1/4 in.  
Trucks, 60,000 lbs. capacity  
Andrews cast steel side frames  
Griffin wheels, 625 lbs.

LaFlare door packing  
Diamond brake beams  
Franklin journal boxes  
Leeds Weatherproof ventilator  
Brown collapsible bulkhead and ice tank  
Kellogg non-splashing drip pan  
Bird's torsion proof roof  
Car insulated all over with half inch linofelt, four-ply  
Capacity of ice tanks. 9000 lbs.



Linofelt Insulation.

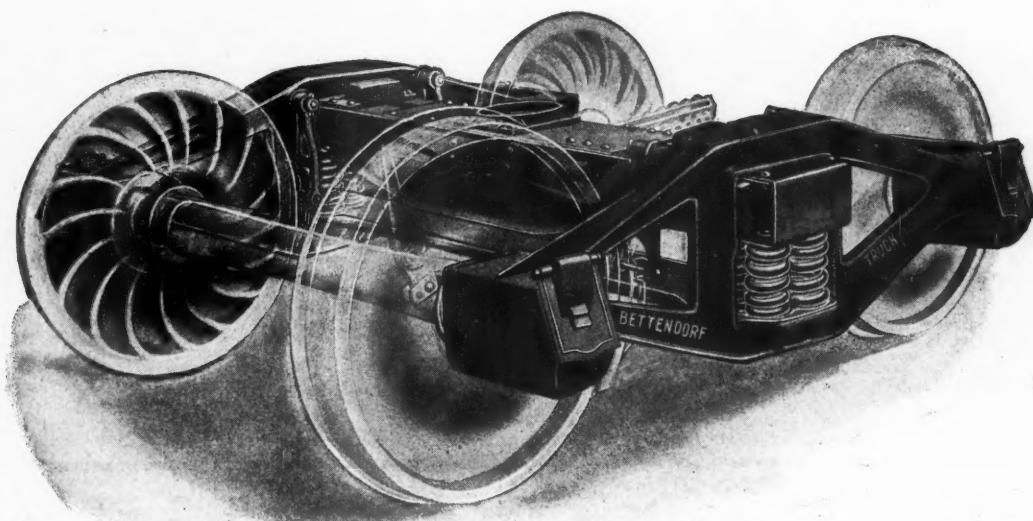
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The BETTENDORF truck is stronger, by far,  
 Than any old out-of-date heavy arch-bar;  
 BETTENDORF trucks are one thousand pounds lighter.  
 Tests prove 'em stronger, although they look slighter.

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**BOOTH No. 200**



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